

# Quantum Monte Carlo and the CASINO program V

Cambridge University International Summer School  
Sunday 1st - Sunday 8th August 2010  
The Towler Institute, Vallico Sotto, Tuscany, Italy  
[www.vallico.net/tti/tti.html](http://www.vallico.net/tti/tti.html)

July 30, 2010

This is the programme for the fifth international quantum Monte Carlo Summer School to be held at TTI. The event will be organized and run by the TCM Group from Cambridge University's Cavendish Laboratory. The purpose of the school is to provide the student with a thorough working knowledge of the quantum Monte Carlo electronic structure method as currently used in quantum chemistry and condensed matter physics, and to show him or her how to use the Cambridge CASINO QMC program for serious scientific research. The course will consist of around 20 hours of lectures by recognized experts in the field and a series of practical exercises in using the CASINO program led by its authors. No previous background other than a basic knowledge of quantum mechanics is assumed. Knowledge of density functional theory and similar methods is useful, as is an ability to work within a Unix/Linux environment. As with all events at the Institute, *Quantum Monte Carlo and the CASINO program* will provide ample time for the participants to relax. Formal lectures are restricted to the mornings, and participants are given the freedom and space to think and to contemplate and discuss the issues at hand. In addition to hands-on exercises, a programme of healthy recreational activities will be organized in the afternoons, and it is hoped that by following this strict regime, together with breathing clean mountain air and by preparing and sampling fine Tuscan cuisine, the participant will be able to return home mentally and physically refreshed as well as better informed.

## 1 LIST OF REGISTERED PARTICIPANTS

Robert Achleitner	Vienna University of Technology, Austria	ra at cms.tuwien.ac.at
Jagendra K. Baria	VP & RPTP Science College, India	jay_baria at yahoo.com
Anouar Benali	CEMES, Toulouse, France	benali at cemes.fr
Sumanta Bhandary	University of Uppsala, Sweden	sumanta.bhandary at fysik.uu.se
Francesco Fracchia	University of Pisa, Italy	francescofracchia at gmail.com
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Lucia Kicinova	Slovak Academy of Sciences, Slovakia	lucia.kicinova at savba.sk
Platon Komarov	Russian Academy of Sciences, Russia	komton at gmail.com
Emmanuel Koukaras	University of Patras, Greece	koukaras at physics.upatras.gr
Hung-Wen Lee	National Dong Hwa University, Taiwan	d9614004 at ems.ndhu.edu.tw
Laura Lopez de la Torre	University of Frankfurt, Germany	l.lopez at kristall.uni-frankfurt.de
Noelia Beatriz Luque	Ulm University, Germany	noelia.b.luque at googlemail.com
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Miroslawa Nedyalkova (W)	University of Sofia, Bulgaria	mici345 at yahoo.com
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Pablo Serra	Universidad Nacional de Cordoba, Argentina	serra at famaf.unc.edu.ar
Rodrigo Vargas	UNAM, Mexico	rockman011 at gmail.com
Shikai Xiang	Institute of Fluid Physics, Mianyang, China	xiangshikai at yahoo.com
Rok Zitko	Jozef Stefan Institute, Ljubljana, Slovenia	rok.zitko at ijs.si

Family members: Ramilaben Jagendrasinh Baria

Staff: Mike Towler, Samantha Keil, Saska Towler, Neil Drummond, Pablo López Ríos, Robert Lee

## 2 FLIGHTS AND TRANSPORT

### 2.1 From Pisa

This section gives details on how to get to the Institute for people flying into our recommended airport: Galileo Galilei Airport, Pisa. It is also possible to fly to Florence which is only slightly further away, but flights to this airport are limited. In principle one could also fly to other airports such as Perugia, Bologna, Ancona, Parma, Milano, Verona, Genova or Roma but you should count on a train ride of up to four or five hours to get to the Institute (we can arrange this for you). A list of airlines flying to Pisa from destinations within Europe is given on the TTI web page (see "Flying to Italy" in the left-hand column). Americans should note that Delta Airlines now operate a direct service to Pisa from New York. Further details about transport, including how to drive to the Institute, are given on the TTI web site.

If possible you should aim to arrive at Pisa airport on Sunday 1st August. If this is not possible (e.g. if flights from your country are irregular) then we recommend having a brief holiday in Florence or similar before coming to TTI. Early arrivals cannot be accommodated at the Institute because of the International QMC workshop taking place the previous week which finishes on Saturday 31st July, i.e. the day before the Summer School starts. Late departures should be possible if necessary - please contact us beforehand to organize this.

*How to get to TTI from Pisa airport on Sunday 1st August:*

Go to Pisa Centrale train station - either by taxi (c. 8 EUR) in five minutes from the airport (preferable) or by a short train ride from Pisa Aeroporto station (which you get to by walking out of one end of the airport concourse - turn left as you walk into the main hall). You then need to get a train to Barga-Gallicano. This is an isolated station north of the city of Lucca somewhere along a branch line going up the valley of the river Serchio into the mountains (see the map on the TTI web site). Depending on the train time, you may need to change at Lucca to get the train north - the train will usually be flagged as going to "Aulla", "Minucciano", "Piazza al Serchio" or "Fivizzano".

The train in question is a little unimportant train, and for some reason only tickets for big important trains seem to be available on the internet. It is easy to buy tickets on the station platform ("Uno a Barga-Gallicano. Solo andata."). On all Italian train journeys you are supposed to validate your ticket by getting it stamped in the yellow machines on the platform or you may have to pay a fine. Note that Italian trains are very (even absurdly) cheap by international standards, particularly British ones. The ticket should cost around 4 to 6 Euros.

At Barga-Gallicano station you should find a TTI representative who will meet each Sunday train as required and take new arrivals to the Institute. If no-one is there you can wait in the lovely station café - do call if you have to wait more than five or ten minutes. Clearly we need to know in advance the time of the train on which you intend to arrive. The timetable is linked from the TTI web site, but all Sunday train times are in fact given in the table below. Note that the last train from Pisa is at 19:50 so it would be a good idea to arrive earlier in the day if possible (particularly as you may wish to attend the welcome dinner).

In emergencies it is possible to get a taxi to Vallico Sotto from the station but in general this needs to be pre-booked - see the instructions on the web site (Barga Taxi : taxibarga@libero.it Tel. 340 1669279 or 348 8106112). If you are a non-Italian speaker who hasn't pre-booked and you need to talk to the guy (Marco) on the phone you will find he doesn't speak English so just say (phonetic) "Taxi a Vallico Sotto da la stasjonay di Barga-Gallicano?" or similar down a phone at him - the trip should cost 35 Euro. Note that "I don't speak Italian" is "Non parlo italiano."

In case of problems contact Mike on his mobile phone - 3479172621, and additional assistance may be available from Samantha Keil on 3479170132. TTI has two direct phone lines (0583 761608 and 0583 1805441) but these should be used as a last resort.

### 3 TRAIN TIMETABLES

See [www.ferroviedellostato.it/homepage\\_en.html](http://www.ferroviedellostato.it/homepage_en.html).

#### Sunday 1st August, Pisa Centrale to Barga-Gallicano stations

VIA LUCCA

dep. Pisa	arr. Lucca	dep. Lucca	arr. Barga-Gallicano
05:30			06:54
07:50			09:13
08:50	09:17	10:02	10:52
09:50	10:17	11:45	12:34
13:43			14:50
14:50	15:17	16:20	17:02
17:50			18:57
18:50	19:17	19:36	20:21
19:50			21:30

VIA VIAREGGIO

Dep. Pisa Centrale	Arr. Viareggio	Dep. Viareggio	Arr. Barga-Gallicano
08:51	09:10	09:28	10:52

#### Sunday 8th August, Barga-Gallicano to Pisa Centrale station

dep. Barga-G.	arr. Lucca	dep. Lucca	arr. Pisa
06:43			08:12
07:56	08:40	09:42	10:12
09:38			11:07
12:00	12:47	13:12	13:42
15:14	16:00	16:42	17:12
17:31	18:13	18:42	19:12
20:10			22:12

#### 3.1 From Milano

Some people are arriving on Saturday in Milano airport. Here is a summary of advice for them.

##### **Travel from Milan Malensa airport to Milano Centrale train station:**

The Malpensa Express train departs from Terminal 1 for Milano's Cadorna train station every 30 minutes. It also stops at Milano Bovisa and Saronno stations. First train departs Malpensa at 06.45, the last train departs 21.45. Journey time is around 40 minutes. Fare: 9 Euro one-way - don't get in a taxi as it will cost you 65 Euro.

Note that Cadorna is the central-city destination for the shuttle train from the airport. It is *\*not\** the main train station of Milano where you need to catch onward trains (Stazione Centrale, or Milano Centrale). You can go between the two by metro (green line) or on foot or by taxi. Here's a transport map that shows both stations:

[http://goitaly.about.com/od/milanitalytravel/1/bl\\_milan-transportation-map.htm](http://goitaly.about.com/od/milanitalytravel/1/bl_milan-transportation-map.htm)

Note that Cadorna is three stops from the Duomo on the red line while Milano Centrale is at the top of the map (Centrale FS.)

## From Milano Centrale train station to Barga-Gallicano

### SATURDAY 31/7

Travel to Milano Cadorna train station on the Malpensa Express, then to Milano Centrale as above.

#### OPTION 1

Milano Centrale	13:10	--> Pisa Centrale	16:57
Pisa Centrale	17:50	--> Barga-Gallicano	18:57

#### OPTION 2

Milano Centrale	13:35	--> Parma	14:48
Parma	15:44	--> Aulla Lunigiana	17:20
Aulla Lunigiana	18:58	--> Barga-Gallicano	20:09

#### OPTION 3

Milano Centrale	14:00	--> La Spezia Centrale	17:18
La Spezia Centrale	17:27	--> Aulla Lunigiana	17:50
Aulla Lunigiana	18:58	--> Barga-Gallicano	20:09

#### OPTION 4

Milano Centrale	16:00	--> Viareggio	19:55
Viareggio	20:11	--> Lucca	20:28
Lucca	20:40	--> Barga-Gallicano	21:30

Cost 25-35 Euros

All trains after 16:00 are too late for the Barga-Gallicano connection.

### SUNDAY 01/08

If you fly into Milano on Saturday, another option is to stay in a suitable hotel in Milano and take a Sunday train instead (remember the official arrival day for the school is Sunday, after all - so it's helpful for us).

Before you arrive, write down the details of suitable hotels near the station. There is a good site where you can book these and print out maps at:

<http://www.traveleurope.it/milano.htm>

or better still:

[http://www.traveleurope.it/milan/milan\\_central\\_station.shtml](http://www.traveleurope.it/milan/milan_central_station.shtml)

The Hotel Monopole seems a good one to me (prices from 44 EUR)

Trains:

#### OPTION 1

Milano Centrale	08:00	--> Pisa Centrale	12:21
Pisa Centrale	13:43	--> Barga-Gallicano	14:50

#### OPTION 2

Milano Centrale	11:35	--> Parma	12:48
Parma	13:33	--> Aulla-Lunigiana	15:21
Aulla-Lunigiana	16:22	--> Barga-Gallicano	17:30

#### OPTION 3

Milano Centrale 13:10 --> Pisa Centrale 16:57  
Pisa Centrale 17:50 --> Barga-Gallicano 18:57

OPTION 4

Milano Centrale 14:25 --> Genova, Piazza Principe 16:14  
Genova, P.Principe 16:52 --> Viareggio 18:38  
Viareggio 19:00 --> Barga-Gallicano 20:21

OPTION 5

Milano Centrale 16:00 --> Viareggio 19:55  
Viareggio 20:11 --> Lucca 20:28  
Lucca 20:40 --> Barga-Gallicano 21:30

## 4 SPECIFIC TRAVEL PLANS

Katie Schwarz

Will attend workshop the previous week, arriving Sat 24 July  
Dep Florence Mon 9 Aug (staying in Florence hotel Sun 8 Aug)

Robert Achleitner

Arr Pisa 12:20 Sun 1 Aug, train dep Pisa 13:43 arr Barga-Gallicano 14:50  
Dep Pisa 13:05 Sun 8 Aug

Anouar Benali

Arr Pisa 08:50 Sun 1 Aug, train dep Pisa 09:50 arr Barga-Gallicano 12:34 (14:50)  
Dep Pisa 16:20 Sun 8 Aug

Jagendra K. Baria, Ramilaben Jagendrasinh Baria

Arr Barga-Gallicano 14:50 Sun 1 Aug by train from Trieste  
Dep ??

Sumanta Bhandary

Arr Pisa 12:20 Sun 1 Aug, train dep Pisa 13:43 arr Barga-Gallicano 14:50  
Dep Pisa 13:05 Sun 1 Aug, train dep Barga-Gallicano 09:38.

Shikai Xiang

Arr Pisa 17:25 Sat 31 Aug, train dep Pisa 13:43 arr Barga-Gallicano 14:50  
Dep Pisa 13:15 Mon 9 Aug

Emmanuel Koukaras

Arr Pisa 10:50 Sun 1 Aug, train dep Pisa 13:43 arr Barga-Gallicano 14:50  
Dep Pisa 19:15 Sun 8 Aug

Laura Lopez de la Torre

Arr Pisa 12:25 Sun 1 Aug, train dep Pisa 13:43 arr Barga-Galliano 14:50  
Dep Pisa 12:50 Sun 8 Aug, train dep Barga-Gallicano 09:38

Jana Radakovic

Arr Pisa, pm Sat 31 Jul (hotel), train dep Pisa 13:43 arr Barga-Gallicano 14:50  
Dep Pisa 11:30 Mon 9 Aug (requires extra night at TTI)

Pablo Serra

Arr Roma Sat 31 July. Hotel. Train dep Roma Termini 09:46 - arr BG 14:50.  
Dep ??

Ivan Infante, Elisa Jimenez Izal  
Arr Florence 11:30 Sun 1 Aug, train dep Firenze 16:27 arr Barga-Gallicano 18:57  
Dep Florence 12:10 Sun 8 Aug

Platon Komarov  
Arr Florence 14:00 Sun 1 Aug, train dep 16:27 arr Barga-Gallicano 18:57  
Dep Florence 17:20 Sun 8 Aug

Lucia Kicinova  
Arr Florence 10:40 Sun 1 Aug, train dep 16:27 arr Barga-Gallicano 18:57  
Dep Florence 17:20 Sun 8 Aug

Hung-Wen Lee  
Arr Pisa ??? Thu 29 July. Hotel 3 nights? Train arr Barga-Gallicano 18:57?  
Dep Pisa

Rodrigo Vargas  
Zurich to Pisa train. Arr. Pisa 16:57. Dep Pisa 17:50 arr Barga-Gallicano 18:57

Francesco Fracchia  
Arr Barga-Gallicano 18:57

Frantisek Karlicky  
Arr Pisa 18:35 Sun 1 Aug, train dep Pisa 19:50 arr Barga-Gallicano 21:30  
Dep Pisa 11:30 Sun 8 Au.

Noelia Beatriz Luque  
Arr Pisa 18:35 Sun 1 Aug, train dep Pisa 19:50 arr Barga-Galliano 21:30  
Dep Pisa 14:45 Sun 8 Aug

Rok Zitko  
Arr Sun 1 Aug by private car  
Dep Sun 8 Aug by private car

Ali Nassimi  
Arr Florence Thu 29 Jul. Hotel. Train dep 17:50 arr Barga-Gallicano 18:57  
Dep Roma Thu 12 Aug. Hotel. Train??

## **5 ACCOMMODATION**

TTI, ATTIC - one single bed  
Mike Towler

TTI, NURSERY - one single bed  
Elisa Jimenez Izal

TTI, PLAYROOM - two single beds, one double bed  
Neil Drummond, Pablo Lopez Rios, Robert Lee

TTI, PINK ROOM  
Samantha Keil, Saska Towler

TTI, LILAC ROOM - two single beds

Noelia Beatriz Luque, Laura Lopez de la Torre

TTI, TINY ROOM - one single bed  
Lucia Kicinova

TTI, RED ROOM - one double bed  
Jana Radakovic

TTI GARDEN ROOM, two single beds (bunk)  
Frantisek Karlicky, Ivan Infante

DOCTOR'S HOUSE, UPPER FAR ROOM - one double bed  
Pablo Serra

DOCTOR'S HOUSE, UPPER MIDDLE ROOM - two single beds  
Platon Komarov, Robert Achleitner

DOCTOR'S HOUSE, UPPER NEAR ROOM - one double bed  
Katie Schwarz

DOCTOR'S HOUSE, LOWER APARTMENT - one double bed, two single bunk beds  
Rok Zitko, Rodrigo Vargas, Emmanuel Koukaras

CASA FRANCA - ROOM 1 - 1 double bed  
Anouar Benali

CASA FRANCA - ROOM 2 - 1 double bed  
Jagendra K. Baria, Ramilaben Jagendrasinh Baria

CASA FRANCA - ROOM 3 - 1 double bed  
Sumanta Bhandary

CASA FRANCA - ATTIC - 1 single bed  
Francesco Frecchia

CASA ANNA-MARIA - ROOM 1 - 1 double bed  
Shikai Xiang

CASA ANNA-MARIA - ROOM 2 - 1 double bed  
Hung-Wen Lee

CASA ANNA-MARIA - ROOM 3 - 1 almost double bed + 1 single bed  
Ali Nassimi

BEDOJIN TENT ([www.vallico.net/tti/tti\\_tent.html](http://www.vallico.net/tti/tti_tent.html))  
Empty

## **6 SUMMER SCHOOL VEHICLES**

28 people, 35 seats

1x17 seater minibus (driver : Mike Towler)  
1x7 seater rental car (driver : Pablo Lopez Rios)  
1x6 seater Fiat Multipla (driver : Robert Lee)

1x5 seater car (driver : Rok Zitko)

SPARE DRIVERS FOR EMERGENCIES (please bring driving license)

Laura Lopez de la Torre

Jagendra K. Baria

## 7 THINGS TO BRING WITH YOU

- Notebook and pen.
- You can bring a wireless-enabled laptop if you want - see note in Technical Equipment section. We have around twenty of them so this probably not necessary.
- Summer hiking gear such as boots, socks, mini-rucsacs etc. Last year somebody managed to do all the walks in a pair of flip-flops but this is emphatically not recommended.
- Italian plug converters if you want to plug anything in (we have some spare but probably not for all countries). Our sockets mostly have two round pins (with an optional third one between them). There are two types of thin prongs on European adaptors. You want the thinner of the two. Just to confuse things, there are also lots of English plug sockets into which English equipment can be plugged directly.
- Some Euros for spending in restaurants and shops (minimum 20 Euros per day). Please note that there is no easily accessible cash machine near the Institute, and although we might pass them from time to time on our afternoon trips, large numbers of people getting money out can cause considerable delays. There is a cash machine in Pisa airport to your right as you emerge into the arrivals hall. (NOTE FOR 2010 : a cash machine has now been installed in Fabbriche di Vallico a few kilometres away - this is now much less flaky than when it was first installed in 2007 but relying upon it to actually give you money would not be sensible.)
- People who intend to visit caves should bring some clothes/shoes that you don't mind getting wet and a head-torch. Also useful for canyon walking.
- Sunscreen. It is likely to be quite hot in the first week of August, but note that because we are in the mountains occasional afternoon rain showers are not unknown.
- A towel.
- Climbing equipment (harness, boots, helmet, via ferrata 'absorber') if you intend to take part in such activities and already have some (don't buy them just for this trip). Helmets also useful for caving. We have a fair amount of gear we can lend but not enough for everyone.
- Light sleeping bag (if you intend to sleep in the Bedouin tent).
- Hay fever tablets. Some students who have lived in darkened basements in huge cities most of their lives sometimes have difficulty with pollen when they come to live in the countryside.
- Swimming costume (if you want to go swimming).
- Earplugs - if you are sharing a room - to avoid being disturbed by snoring people.

In the tradition of events at this venue, you might also optionally like to bring

- A nice bottle of wine (or whatever passes for it in your country).
- An interesting thing



## 8 SUMMER SCHOOL SCHEDULE

Here is the proposed schedule for the Summer School. The main instructors are Dr. Mike Towler, Dr. Neil Drummond, Dr. Pablo López Ríos and Dr. Robert Lee. One or two of the students may also have a little experience with QMC: if that is the case, you are warmly encouraged to give a little ten-minute presentation of what you have done so far - contact us to arrange this. People are also welcome to bring posters of your work which can be attached to various flat surfaces in the monastery.

Sunday 1st August

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ARRIVALS

~7:30pm : Buffet dinner in the Institute garden.

Monday 2nd August

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8.30am : Mike Towler - "Quantum Monte Carlo : the basics. Overview of everything. Why QMC? Basic MC integration/VMC/DMC theory. Many-electron wave functions - aperiodic and periodic. Basic solid-state ideas - reciprocal space, k points etc. Idea of wave function optimization Representation of orbitals. Basis sets. Spin. Excited states. Total energy." (2.5 hours)

11am : BREAK

11.30am : Mike Towler - "An introduction to the CASINO program" (1 hour)

12:30pm LUNCH

PRACTICAL SESSION -

1.30pm-3pm Distribution, setup and compilation of the CASINO program (MDT)

3pm EXCURSIONS

Trip to Alto Matanna. Four spectacular walks of varying difficulty. See the entire Versilia coast, Elba, Corsica and sometimes even France from the easily accessible summits of some of the more beautiful scenery in the Apuan Alps. Bring one of the Institute's antique telescopes to watch the more courageous of you scale the 500 foot cylindrical barrel of Monte Procinto.

Followed by drinks and dinner in 19th Century Alpine hotel.

- Balloon station walk
- Monte Matanna walk
- Monte Procinto climb
- Grotta all'Onda walk (Neanderthal cave)

DINNER : Alto Matanna (BOOKED FOR 28)

Tuesday 3rd August

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8.30am : Pablo Lopez Rios - "Statistical analysis of VMC results. Basic DMC - how to run a calculation. How to extract and analyze DMC results. Serial correlation. Timestep optimization. Correlation time. Reblocking. Use of graphit program. Other statistical issues." (1 hour)

9:30am : Neil Drummond - "Jastrow factors and wave function optimization" (2 hours)

11:30am : BREAK

11:45am : Pablo Lopez Rios - "Pseudopotentials for quantum Monte

Carlo" (40 minutes)  
12:30am : Mike Towler - "Pseudopotentials : practical details" (30 minutes)

1pm LUNCH

2pm PRACTICAL SESSION -  
Basic use of CASINO program - simple VMC, DMC calculations (MDT/PLR)

#### EXCURSIONS

- Turrite di San Rocco canyon walk
- Tana di Cascaltendine + search for the Cave of the Fairies
- Boating on the Turrite Cava lake (+ Buca del Lago della Turrite Cava)
- One hour walk around Barga countryside (then town centre). Optional swimming.

DINNER : Da Sandra (BOOKED FOR 28)

Wednesday 4th August  
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8.30am : Neil Drummond - "Solid state calculations. Interactions and finite size effects" (2 hours)

10.30am : BREAK

11am : Pablo Lopez Rios - "Orbital optimization, multideterminants and backflow, with numerical results" (2 hours)

1pm LUNCH

2pm PRACTICAL SESSION  
- Wave function optimization with CASINO (NDD)

#### EXCURSIONS

- Walk Matanna to Monte Forato (rock arch) to Fornovolasco
- Tana che urla full exploration (+ optional cave hunting)
- Grotta del Vento tourist cave
- Fornovolasco church and flood frescoes
- Swimming at Gallicano

DINNER: Eremo di Calomini (BOOKED FOR 28)

Thursday 5th August  
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8.30am : Neil Drummond - "Advanced diffusion Monte Carlo. Timestep errors. Green's function modifications. Fixed-node approximation. Wave function nodes. Fermion sign problem (release node and fermion Monte Carlo, optimizing the nodes). Expectation values in DMC. Future walking etc. Population explosions." (1.5 hours)

10.00am : BREAK

10.15am : Mike Towler - "Scaling with system size. Localized orbitals and localized basis sets (Gaussians/blips). All-electron calculations. Heavy atoms - timestep errors. Scaling with number of processors. Exploitation of parallel hardware. (1 hour)

11:15am : BREAK

11:30am : Neil Drummond - "Applications : systems with atoms" (1.5 hour)

1pm LUNCH

PRACTICAL SESSION

- Trial wave function generation with other programs (CRYSTAL/PWSCF/CASTEP etc.)
- Advanced use of the CASINO program (PLR)

"Vallico Sotto Contro Il Mondo" - football match.

DINNER : Provided by Federico and the ladies of Vallico Sotto. (BOOKED FOR 28)

Friday 6th August  
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8.30am : Mike Towler - "Forces and derivatives. Dynamical calculations. Expectation values other than the total energy computable with CASINO. De Broglie-Bohm pilot wave theory and QMC. " (2 hours)

10.30am : BREAK

11.00am : Robert Lee - "Applications : electron-only systems (fluid phase, Wigner crystals etc.) Electron-hole systems. (1 hour)

12.00am : "Ask Pablo" - QMC Q+A session. Advice on using QMC for your particular problems.

1pm LUNCH

EXCURSIONS

- Orrido di Botri/Montefegatesi
- Lucca

PRACTICAL SESSION

- Advanced use of the CASINO program (PLR - continued)
- General CASINO applications.

7.30pm DINNER : Il Laghetto (BOOKED FOR 28)

Saturday 7th August  
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MORNING

9.am : Student talks -  
Frantisek Karlicky - "Ionized helium clusters: zero-temperature quantum effects" (20 minutes)

9.30 am

Exercises with CASINO and QMC exam (with prizes)

AFTERNOON/DINNER

- Long distance excursion to Florence/Cinque Terre or similar

Sunday 8th August  
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DEPARTURES

## 9 EXCURSIONS AND ACTIVITIES

Here is the list of excursions and activities offered to the International Workshop participants the week before the School. Clearly with the Summer School we have less time in the afternoons because of the need to run CASINO practical sessions so some of these excursions will no longer be feasible. Nevertheless we shall try to get through quite a few of them, according to the time available and the tastes and interests of the students.

The various activities are divided into categories according to the physical effort involved. As there will be more than 35 people at the Summer School, it is envisaged the group may split into two, with the hot young muscular virile people doing the strenuous excursions, and the lazy, old and corpulent doing the more relaxed activities. What to do can be debated in the morning each day - all according to taste. Of course, as there will be multiple vehicles, we can do different activities simultaneously.

### 9.1 Very strenuous activities

- Climb the peak of Pizzo d'Uccello. Requires early start with no other activities (e.g. day before conference). See [www.tcm.phy.cam.ac.uk/~mdt26/tti2/photos/pizzo\\_duccello.jpg](http://www.tcm.phy.cam.ac.uk/~mdt26/tti2/photos/pizzo_duccello.jpg). Enough said. They don't call it the 'Matterhorn of the Apuan Alps' for nothing.
- The ascent of Monte Procinto. This is a huge cylindrical rock tower with a belt of trees around its middle from which rise 500-foot walls, overhanging on every side. Michelangelo had the idea of carving it into a gigantic sculpture along the lines of Mount Rushmore but never got round to it. You can see the mountain here: [www.vallico.net/procinto.jpg](http://www.vallico.net/procinto.jpg). Yes - the walls are more or less vertical, but there is a *via ferrata* to clip yourself onto. Instruction, assistance, and the necessary equipment can usually be supplied - but we only have about eight harnesses so bring your own if you have one!
- Reach the high peak of Pania della Croce from Piglionico (described as 'The finest peak in the whole of Italy' in *Below the Snow Line* - one of the 19th century books in the TTI Antiquarian Library). Also features in Dante's *Divine Comedy*. This defeated some of TTI finest mountaineers for several years before they finally succeeded in 2007 (note - it isn't that hard if you move quickly).
- Find the spectacular natural rock bridge of Monte Forato (under which someone once flew a bi-plane). Start from Fornovolasco (lots of up) or from Matanna (much easier) or even have two groups that meet in the middle and exchange car keys. New for 2009: there is a fun *via ferrata* traverse on the way to the arch from Matanna, and we will do a new route via Foce di Valli.
- Find the Neanderthal cave (Grotte all'Onda) down the slope from the balloon station near Matanna. "This vast grotto stretches 40 x 60 meters and it originally hosted numerous internal tunnels, which are obstructed today. Its enormous cavity offers important evidence that suggests the frequency with which people entered the grotto, from pre-historical times to more recent periods. The first people to use the cave were Neanderthals; they hunted throughout the surrounding area and probably used it to hoard their tools and weapons, together with the bones of the animals they cooked. Hunters from the Superior Palaeolithic period (Homo Sapiens) lived in the more external part of the grotto where they set up a giant hearth. Later, Neolithic farmers and shepherds planted their huts in the shelter of the grotto's vast vault, carrying out their daily activities there during many seasons. This cave was also used during the Neolithic period (the Bronze Age), during which new models were developed for decorating ceramic. During this period, new raw materials, imported from distant locations, were adopted to make special equipment. From the post-Bronze Age until recent times, the grotto was not continuously frequented."
- The new Geoscopio web site ([link/instructions](http://link/instructions) at [www.vallico.net/tti/tti\\_mountaineering.html](http://www.vallico.net/tti/tti_mountaineering.html)) shows precise locations of all of the thousands of caves in Tuscany (even the crap ones) together with a brief technical description and a plan of the cave. Interesting little expeditions may be made that have the aim of finding the entrance to particular caves, as well as exploring them. This is of course the most fun that a boy can have. The Apuan Alps have more caves than you can possibly

imagine, so this will still be a viable activity in 2050. In particular, ask Mike about the untried Campolemisi, Fabbriche di Vallico, Motrone, and Antro della Paura expeditions.

- Explore the canyon of the Turrite di San Rocco river. This starts from the fork in the river upstream from Fabbriche di Vallico before you get to Gragliana. Take the left-hand fork. The aim is to go all the way through it to take coffee at the cafe near the Chiesa di San Rocco in Turrite, but as of July 2009 we have been unable to establish if this is feasible. (MDT only had a spare ten minutes and went in a few hundred yards - it seems great). Be prepared to get wet. Someone told me there was a great natural swimming pool in there. Once reaching the village where the cafe is (there is also a children's playground and a nice river) you will have to bribe a local (pool your Euros) to give your driver a lift back via Focchia to your van. Use your initiative here.
- Morning workout. Run from the Institute each morning at 6am to the spectacular summit of Monte Palodina in order to tone up your thigh muscles and pep yourself up in preparation for the morning's talks. Mad people only.
- Complete the Cinque Terre coastal walk, a four-hour excursion through some of Italy's most spectacular scenery, or a similar walk near the famous seaside haven of Portofino.
- *Orrido di Botri* canyon walk. The Orrido is a giant canyon created by the Pelago river in the Apennines (about an hour's drive from the Institute) with deep steep walls as high as 200 metres and in some places only a few metres apart. This is a geologists' and naturalists' paradise. It can only be visited with helmets and suitable clothing you don't mind getting wet. There are some nice long walks in the country above the canyon (watch out for marmites and Royal Eagles - this is one of your best chances to contribute to the TTI Wildlife Photography expedition).
- There are of course any number of spectacular high mountain expeditions in the Apuan Alps and the Institute has a library of guidebooks which you can browse through. Let me know if you want to try anything else (that will fit in the clearly limited amount of time). There is also the TTI Antiquarian library (Mountaineering section) to inspire you.

## 9.2 Quite strenuous activities

- Go to Alto Matanna at the end of the Turritecava valley and visit the beautiful nineteenth-century hunting lodge that was once the destination for travellers in Rosetta the Balloon on her aerostatic cableway. See the old balloon station at Foce del Pallone and the extraordinary view. On clear days you can see Elba - 100 miles to the South - and sometimes the even more distant Corsica and the French Alps. Come back over the top of Monte Matanna and descend back to the lodge. Take one of the Institute's antique telescopes with you.
- From the Matanna hotel, climb up to the cross on the adjacent ridge for a spectacular view of Monte Procinto, Stazzema and the Apuan Alps. From there you can climb Monte Matanna the other way around, or visit the donkey and his little horse friends who live on the top of Monte Nona. Or you could go on a longer walk below the Giant West Wall of Nona, threading past Monte Procinto, and round the back of Monte Nona which will take several hours. Finish up the day with a fabulous dinner in the Matanna hotel.
- Take part in the latest expedition to the ancient cave known as the *Tana di Cascaltendine* which is the subject of Pietro Magri's 1880 book *An expedition to Mount Gragno and the Cave of Cascaltendine* as translated by Mike and available on the TTI web site (click the Local History Projects link). The 2007 summer school crew were able to photograph the result of the following quote : *'Before coming down from the cavern we used a chisel to inscribe our initials and the year 1880 on both walls of the passage near the entrance.'* This was done in the "Palace of Ismeno" which was the name Magri's group gave to an extensive cave whose entrance is a 6 foot hole about forty feet up a cliff - the full story is on the News from the Towler Institute blog. It is also known that the cave continues for a kilometre beyond where we have penetrated before and this remains to be explored (note that in summer 2007, Mike and Evans went up the big wall in the final chamber with the dangling rope - a place many TTI visitors have visited before - with somewhat amusing consequences - see the blog story 'Bronze Hermaphrodites and the Fat Boy Filter'). Expedition to

be followed by cold beers and refreshments in the lovely village of Cardoso, or a circuit of Monte Penna hunting for the lost Cave of the Fairies..

- Visit the Selva del Buffardello adventure park ([www.selvadelbuffardello.it/index.php?lang=eng](http://www.selvadelbuffardello.it/index.php?lang=eng)). I quote from their web site: "Among the centuries-old fir trees some acrobatic forest paths, open to everybody, have been created and their aim is to show the wood from a different and adventurous point of view: hanging in the air. It is a challenge for children, youth and adults, who can test their ability with suspension bridges, swinging beams, vertical nets, ropes and obstacles, finding again their lost adventurous spirit. The Adventure Park 'Selva del Buffardello' in San Romano in Garfagnana (locality Pra di Lago) is a real novelty in the Appennino Tosco Emiliano. An old wood of two hectares and a half in the heart of Garfagnana, near the natural 'Parco dell'Orecchiella', with a wonderful view on the Alpi Apuane and on the Fortezza delle Verrucole (old castle). The park entrance is free if you don't practise in the adventure paths." We have never tried this, but it looks like great fun.
- TTI management has discovered that there is a secret underground tunnel in Vallico which starts from the Doctor's House next door to the Institute (a former barracks) and which goes up to the Rocchetta above the village (the site of an old castle on the summit of a little hill, where we now pitch the Bedouin Tent). This was used in mediaeval times for escape from the frequent warfare so common in these parts. The supposed entrance to the tunnel was bricked up (we think) in the 1930s - there are a couple of elderly men in the village who vaguely remember it. This summer we hope to unblock the entrance and explore. We also wish to find the upper entrance, so if you know anyone who has a ground-penetrating radar set we can borrow, let us know. This will probably be one of the next thrilling tales in "News from the Towler Institute".
- Explore the Vallico Sotto mule trail and the spectacular forgotten waterfall of Cascata Pendolina - one of the highest in Italy. Vallico was only connected by road to the outside world in the 1960s - before then people went up and down the *mule trail*. This has now been forgotten and is a little overgrown (though less so following TTI clearing activities) but is still very beautiful. Once we reach the bottom of the valley we will head over the river to the site of the Cascata Pendolina where we will take lunch. On the way back the bravest people will try to ascend the *Canyon of the Pili* carved by the Rio Selvano (you will get wet!). EDIT: and they will fail - I have recently discovered the only way you can feasibly do this is to *descend* from the top. Apparently this canyon is quite famous - the Apians group from Castelnuovo organize tours through it. One of these days I will have to attach myself to one of these expeditions to learn how to do it. Apparently there are 12 major waterfalls to descend - photos and rough maps are linked from the Mountaineering page of the web site.
- Explore *Buca della Freddana* cave near the mule trail from Vallico Sopra to San Luigi. This was (re-)discovered by Mike in Easter 2007 following conflicting and confusing advice from several local old ladies who remembered its existence from 40 years ago. He has also found the upper entrance of the same cave on the summit of Monte Penna - the two are apparently connected by a 1 kilometre passage. The old ladies have advised us not to go inside because of the evil monsters and dark pits that lurk within, but then again, they always say that. Dare you explore?
- Five a side-football (a new fenced pitch was constructed in Vallico a couple of years ago) or regular football (on the local full-sized pitch).
- Rock climbing or low-level bouldering - the Institute should have some ropes and climbing equipment. I've read that there is good climbing near the Trombacco dam in the next door Fornovolasco valley - ask MDT for more details. Don't forget to bring climbing boots and a harness that fits if you want to do this seriously (we have a rope you can borrow).
- Pietro Magri in his 1880 book mentioned above states that there are two other caves in Monte Gragno besides the Tana di Cascaltendine. Today no-one seems to know where they are. Having found the Buca della Freddana, Mike has narrowed down the lost "Cave of the Fairies" to a relatively small area. Can you find it?

- Traverse from Santa Luigi via Monte Palodina and the cliffs of Monte Gragno past the giant karst depression of Pian di Lago to the spectacular Rocca Estense fortress of Trassilico. Come back along the road past La Fornace.
- Explore the *Tana che urla* (the Cave that Screams!) - first explored and scientifically described by Vallisneri in 1726 - off the footpath to Foce di Petrosciano from Fornoalasco. This isn't a tourist cave suitable for your mum - so bring some appropriate clothes and torches. By the summer the Institute should have some proper speleological equipment to hand round. If you can read Italian, have a look at [www.buffardello.it/attivita/pubblicazioni/di\\_alcune\\_grotte.pdf](http://www.buffardello.it/attivita/pubblicazioni/di_alcune_grotte.pdf).
- Go on a beautiful walk over the highest stone railway bridge in Europe to the church in Sambuca.
- Go wild boar hunting.
- Learn to play local sport *palla elastica* (elastic ball) with the village youths.
- Use TTI's two inflatable boats to play on the Turrtecava lake - accompanying picnic recommended. Have races. Try to find the Buca del Lago della Turrite Cava (as you sail towards the dam, it is on the left just after the exit of the second road tunnel).
- Go kayaking on the Turrtecava. Bring your own canoe.
- Explore the ancient *Vasaio di Motrone* cave in the nearby village of Motrone (see [www.apuane2007.it/italiano/vasaio/zona\\_vasaio.php](http://www.apuane2007.it/italiano/vasaio/zona_vasaio.php)).

### 9.3 Relaxed activities

- Visit the Pinocchio park, the Garzoni gardens, and the Collodi butterfly house in Collodi. See [www.pinocchio.it/park.htm](http://www.pinocchio.it/park.htm). From the website: "Inaugurated in 1956, the Pinocchio Park is no ordinary theme park, but rather a precious masterpiece created by artists of great character working together. The literary itinerary, marked out by mosaics, buildings and sculptures set amidst the greenery, emerges from an inspired combination of art and nature. The path is winding, and the dense vegetation means that every stage on the route comes as an unexpected surprise, with the very plants and trees contributing to create the atmosphere and the episodes in the story of the Adventures of Pinocchio. The Park itself is the site of constantly renewed cultural activities that are always mindful of its roots: exhibitions of art and illustrations inspired by childrens literature and the Story of Pinocchio, puppet-making workshops, puppet and marionette shows and minstrels enliven the visit to the Park, depending on the season. ". For the gardens: "The historic Garzoni Garden, one of the most beautiful in Italy, represents a felicitous synthesis between Renaissance geometry and the spectacular quality of the nascent Baroque. The garden is a work of art of rare equilibrium, where the greenery, the flights of steps the water plays and statues form a truly unique ensemble. It is an absolutely unforgettable experience to lose oneself amidst the wonders of this fantastic place: grottoes, theatres carved out of box hedges, statues representing mythological creatures, satyrs, female figures, greenhouses with peacocks, forests of bamboo. An ancient, and somewhat arch tradition considers the visit to be propitious for lovers, and not only on account of the leafy shade and the arbours that offer secluded spots for tender caresses, but also of the maze, a symbolic allusion to the path to follow together throughout life. As soon as we enter the garden we come upon delightful parterres, statues and two large circular pools. Proceeding we then reach two magnificent double ramps of steps featuring a complex hydraulic system that supplies the water plays. These steps lead to the three upper terraces. Beyond is the impressive water staircase, flanked by two female statues representing the eternal rivals Lucca and Florence. At the very top is the statue of Fame blowing into a shell, emerging from which a jet of water traces out a lofty arc. Leading off the main route through the garden are numerous side paths and avenues where we can discover its marvels among the fragrances of the different plants, the plays of light and shade of the vegetation, the intrigue of the mazes and the enchantment of the sculptures. The garden has recently been restored."
- The Opera Barga festival is usually on at the same time as the conference (25th July-8th August in 2009). Ask Mike in advance for tickets and reservations.

- Look in the latest issue of Lucca "Grapevine" magazine in English for local cultural activities and concerts etc..
- Play with the Institute's Victorian Scientific Instrument Collection.
- Spend the afternoon bathing in the outdoor hot pool at the ancient thermal baths of Bagni di Lucca (one of the most fashionable spots in Europe in Lord Byron's time - the Switzerland of Tuscany!). Followed by shopping, sightseeing and coffee in the town centre.
- Samantha has two other favourite open-air pools at Galliciano and Barga. These are like little beach resorts where one lazes about on deckchairs and has the occasional dip.
- Watch the night sky through the Institute's astronomical telescope.
- Visit the ancient city of Barga ([www.barganews.com](http://www.barganews.com)) for an afternoon's relaxed sightseeing, shopping and culture.
- Visit the beautiful city of Lucca.
- Visit Castelnuovo di Garfagnana, where you can find Andrea's (the 'Indiana Jones of the Garfagnana') famous Osteria, where all day you can sample fabulous local wines, cheeses and snacks.
- Follow in the footsteps of Michaelangelo, and visit some of the Apuan Alps famous marble quarries.
- Day trip to Florence.
- Drive to the next valley along from ours over a spectacular high mountain road where the eagles live. Visit the Grotta del Vento - the Cave of the Winds ([www.grottadelvento.com](http://www.grottadelvento.com)). This is the most famous cave system in Tuscany and the visitor will enjoy a spectacular and bizarre landscape of caverns and lakes. Take a pullover as the temperature is a reliable 10 degrees the whole year round. Then head down the valley to visit the *Eremo di Calomini* - an ancient monastery built into a high steep cliff.
- Table football and drinking in Fabbriche di Vallico.
- Horse riding at La Fornace.
- Various mild short walks around the Institute.
- Digging the Institute garden and doing little DIY things like restoring the church or clearing paths (I say this merely in hope..).

#### 9.4 Very relaxed activities

- TTI now has a high-definition video camera. Make a film of life at one of the world's best conferences.
- Budding archaeologists may use the TTI metal detector - bought following last year's spooky event when Evans and Mike were digging a hole in the ground for the satellite dish (I'm really not making this up): MIKE: Hey Evans, watch out for crucifixes when you're digging that hole. This used to be a monastery you know. EVANS (REACHING INTO THE HOLE) What, like this one? (HOLDS UP A THOUSAND YEAR OLD BRONZE CRUCIFIX FROM FIVE FEET DOWN).
- Spend all day in the TTI garden relaxing in one of the Institute's three hammocks, drinking wine, snoozing or reading one of the books from the TTI library.
- The Institute has a variety of board games, jigsaws, and similar entertainments together with a number of Victorian books with titles like "What To Do On Cold Winter Evenings Given That We Haven't Invented Television Yet".
- Debate physics with the help of the Institute blackboards.



- Listen to one of Mike's tedious lectures inspired by the contents of the TTI Antiquarian Library such as *Richard Burton and the Source of the Nile* (Burton the Victorian explorer and polymath, not the one out of *Where Eagles Dare*..) or *Up The Orinoco with Alexander von Humboldt*.
- Spa treatments in the Bagni di Lucca "Thermal resort".
- Mike is translating some chapters of a book on the history of Vallico Sotto. If he's finished it by the time you visit, then walk around the village looking at the buildings and places it describes.
- MDT has taken to writing stories about events at the Institute and publishing them on his blog at the local Barga News website. See [www.barganews.com](http://www.barganews.com) and the "News from the Towler Institute" blog (or go to the TTI web site [www.vallico.net/tti/tti.html](http://www.vallico.net/tti/tti.html) and click on the relevant link in the left-hand column). So far these are mainly about cave explorations and similar adventures. However, Mike doesn't have a monopoly on this. If you wish to contribute your literary efforts then please send your stories about your adventures in Italy to him, and they will be published on the blog.

## 9.5 General

- The Institute has a wildlife photography notice board. Prizes for the best entries, particularly if you can take a picture of one of the eagles that regular soar above Vallico or of the elusive *marmite*.
- The Towler Institute Exploration Society also has a photographic competition running - see the web site for details.
- Revitalize the economy of Vallico Sotto. It's barely 40 years since 450 people lived here. Now less than 100 do so. Just because modern lazy teenagers want to be fashion models smoking drugs in Milan rather than having a nice healthy outdoor life, the population of rural Italy has been denuded. Let's bring back the time when all the mountain terraces were in production, packs of nice mules helped carry things, teams of volunteers kept paths and bridges open, and everyone knew how to bake chestnut cakes. All serious suggestions gratefully received.

## 10 TTI TECHNICAL EQUIPMENT

There are various modern laptop computers in the Institute available both for general use and for CASINO practical sessions. Most run both OpenSuse Linux 10.3/11.0/11.1/11.2 and Windows XP/Vista, but the practical sessions will be run under Linux. Though not really necessary you may bring your own laptop if you wish. It would help if you could set up a fortran (95) compiler on it before arriving at the school (we recommend Intel's free ifort compiler - available for download on their website).

All connections are made through a WiFi wireless network (802.11b or 802.11g). If you wish to bring your own laptop then it therefore needs to be wireless-enabled if you wish to log into the network (three spare wireless network cards that you can plug into your laptop PC card slot are available). The Institute SSID is 'TTI' and the network is completely unencrypted due to the total absence of hackers, or indeed computers, in remote mountain villages. Since June 2009, TTI is hooked up to the local 2 Mb/s wireless broadband network.

Apart from computers and networking devices, we also have the following equipment available for conference participants to use:

- Canon Pixma ip4000 colour inkjet printer (on a wireless print server, so one can print from anywhere in the Institute)
- Hi-Ti Transphotable photo printer for instant printing of your photographs (you can plug in your camera directly - no need to go through a laptop - accepts all memory card formats that I am aware of).
- Epson Perfection 4990 scanner

- A3 laminator
- Guillotine.
- Finepix F455 digital camera
- A HD video camera
- Two memory sticks
- A supply of writeable CD-Rs, CD-RWs and DVD-Rs.
- The usual stationery and staples etc..

A technical guide to the TTI computer systems will be available. There is also a good selection of scientific reference books.

## 11 INTERNET USE

TTI laptops are mainly black/grey Sony Vaios with a few red Acer Ferraris (note the difference in power supplies - the ones for the Ferraris have yellow ends, the Sony machines have black ones). All but tti\_laptop1 are in dual boot configurations with some version of OpenSuse Linux and Windows XP/Vista - after turning them on you should choose which OS you want. All will boot into Linux after some time by default unless you say otherwise. We essentially never use Windows here so the setup on the Windows partitions will be minimal if it has been done at all.

Since June 2009 the monastery's local network connects to the outside world through a 2Mb/s wireless broadband network (having previously been on dialup!). All local machines have static IP addresses 192.168.1.2x (where 2x is 20 plus the number of the machine - a red plastic label saying e.g. tti\_laptop 9 implies 192.168.7.29) so they can all talk to each other via ssh or ftp etc.

Other network details for administrators: IP 192.168.1.xx (static xx=10-99, DHCP assigned numbers from xx=102-200), Gateway 192.168.1.1, Primary DNS 62.94.0.41, Secondary DNS 212.216.112.112.. The router has a (password protected) web page at 192.168.1.2. Other equipment attached to the network - a VoIP phone (192.168.1.98), an internet radio (192.168.1.99), a wireless print server (192.168.1.101), and possibly the NEC projector usually on DHCP. Do not assign your own static IP number on personal hardware without consulting MDT or PLR.

Please be mindful of the needs of other users of the network. Although we have broadband, it is hardly a superfast connection, and downloading 84 Gb of files to patch your Windows distribution or whatever is discouraged.

Note also that there is currently network coverage only in the main TTI building and not in any of the other houses we use for accommodation (Doctor's House, Casa Franca, Casa Anna Maria, Bedouin tent).

## 12 PRESENTATION EQUIPMENT

The church is equipped with a NEC MT1075 projector, a giant 16' by 12' main screen, a 7'8 x 5'9 electric auxiliary screen, an Avervision document camera, a dual projection stand, a laptop, a DVD player with decent speakers, and various wireless control devices. There is a giant blackboard in the church and a smaller one in the main corridor stolen from the TCM Seminar room in the Cavendish.

The projector is wireless capable, so presentations can be beamed from your laptop straight to it from anywhere in the room, as well as with old-fashioned direct connection (technical specs on the TTI website). The projector also allows PCMCIA card Mobile disks to be plugged into it. The Institute laptops - equipped with Suse Linux and Windows XP/Vista - will of course also take CDs and have the usual

software such as Acroread and Powerpoint.

In the unlikely event of the NEC not functioning correctly with your laptop, or if you wish to project two images at once (e.g. one from a laptop, one from the document camera), there is also an auxiliary Toshiba DPD TDP-T250U projector.

The Institute has an Avervision document camera instead of an overhead projector. This will display any printed document, photo, slides, X-ray film or 3D object straight through the NEC projector, so basically you can dissect a frog live on the wall. There is a Victorian microscope with an attachment that allows it to be connected to the Avervision, so biological people can project the microworld onto the big screen. Although we have a table with a white square painted on it, non-electronic talks are probably better on white pieces of paper rather than on transparencies..

Speakers can of course ignore all the technology and use the blackboard.

## 13 DINNER

In general breakfast will be taken in the Institute, and lunch in the little bar in Vallico Sotto run by the charming Monica.

In the institute some basic food staples will be provided which participants should feel free to fight over but in general you might like to buy your own food in the village shop run by the lovely and friendly Adelina. However sadly you can't because it closed in late 2007 - much to the consternation of all she has now relocated to a big new shop down in the main valley in Pian di Coreglia. To replace her, there are two food shops in Fabbriche di Vallico - five minutes drive downhill, and a giant Leclerc supermarket in Gallicano (twenty-five minutes drive).

To find the Vallico Sotto bar for lunch, go down the tunnel underneath the Doctor's house (the big house opposite the TTI church front door). Then take any path downwards until you get to the Vallico main square - the bar is just underneath that.. You are strongly encouraged to take your lunch here, as normally it doesn't serve food and Monica is doing us a big favour by buying food and preparing it - so we need to make it worth her while . Note you can also get beers and coffees and so on here..

Note that people in local shops - or indeed anywhere round here - tend not to speak English, so learning some basic Italian food words before you come will help : *pane* = bread, *formaggio* = cheese, *prosciutto* = ham, *pomodori*=tomatoes, *birra* = beer, *vino* = wine, *caffè* = coffee, *latte* = milk, *grazie!* = thank you!.

You are of course welcome to make use of the Institute's cooking facilities whenever you want. There is a big downstairs kitchen in the main building, and a small upstairs kitchen. The Institute even has its very own *Il Collegio Cookbook* written and published by former owner Leonie Whitton whose recipes you are encouraged to try. There are also two kitchens in the adjacent Doctor's house which will be rented for the duration of the conference, and one in the Casa Franca house.

On the first evening a simple buffet dinner will be provided. Later in the week the Institute's 16th Century pizza oven may be pressed into service. The rest of the time we will make use of the excellent local restaurants - these are mostly incredibly cheap. Unless told otherwise, Mike will simply assume that you will be coming to each evening meal and will make bookings accordingly (generally a few weeks in advance). These bookings can be changed but please give Mike plenty of notice.

Finally, if you are a vegetarian, you need to be aware that the locals will consider you to be slightly mad and will feel very sorry that you are unable to enjoy their passion for delicious animal products of all kinds. Don't worry about this. Following several years of TTI activities, they are now used to us bringing curious foreigners to their restaurants and most are now able to supply vegetarian meals of some kind.

### A FEW LOCAL RECOMMENDED LOCAL RESTAURANTS

- Mulino Biologico (3280 707037, Fabbriche di Vallico)
- Da Sandra (0583 761289 on the road between Fabbriche di Vallico and Vallico Sotto).
- Il Canapale (0583 761829, Vallico Sopra)
- Al Laghetto (near the lake at the entrance to the Turrtecava valley)
- La Rondine (0583 761751 Fabbriche di Vallico, open Fri evening, plus all day Sat/Sun)
- Alto Matanna (0584 776005, Matanna)

#### RESTAURANTS SLIGHTLY FURTHER AFIELD

- Circolo dei Forestieri, Bagni di Lucca
- Antica Trattoria dell'Eremita, Vergemoli
- Il Garfagnino, on the main road near Turrtecava
- MANY MORE

#### SPECIAL RESTAURANTS

- La Buca di Sant'Antonio, Lucca
- La Mora, Ponte a Moriano
- Butterfly, Lucca

See also the TTI Restaurant Guide page on the website.

## 14 CINEMA VALLICO

The requirements of modern science presentations means the Institute church is also the only cinema in the whole of the Apuan Alps - a fact that local people very much enjoy (since the opening presentation of *Cinema Paradiso* in August 2005). During the conference you are welcome to use the projectors and it is expected that movies will be shown on several nights. The Institute has an extensive DVD library which you are welcome to browse. Feel free also to bring your own movies that you think we might enjoy.

## 15 NEWS FROM THE TOWLER INSTITUTE

MDT has taken to writing stories about events at the Institute and publishing them on his blog at the local Barga News website. See [www.barganews.com](http://www.barganews.com) and the "News from the Towler Institute" blog (or go to the TTI web site [www.vallico.net/tti/tti.html](http://www.vallico.net/tti/tti.html) and click on the relevant link in the left-hand column). So far these are mainly about cave explorations and similar adventures. However, Mike doesn't have a monopoly on this. If you wish to contribute your literary efforts then please send your stories about your adventures in Italy to him, and they will be published on the blog.

## 16 FOOTBALL MATCH: VALLICO SOTTO CONTRO IL MONDO

The thrusting young lads of Vallico Sotto have challenged the Rest of the World - i.e. you - to a game of 5-a-side football on the village pitch. This tradition - which we began last year - attracts a large crowd. Volunteers for the TTI team are below:

Rodrigo Vargas

OTHERS TO BE CONFIRMED

## **17 QMC CONFERENCE**

The Summer School will be preceded by an International Quantum Monte Carlo workshop so your instructors should at least be up to date with the latest developments. The programme for this event can be found on the TTI website for anyone interested.

## **18 HEALTH AND SAFETY**

We should all recognise that climbing and mountaineering are activities with a danger of personal injury or death. Participants in these activities during their stay at TTI are asked to be aware of and accept these risks and be responsible for their own actions.

Vallico Sotto is a mediaeval village built a thousand years ago on a steep slope with many steps, and the facilities for the disabled are thus completely disastrous to non-existent. However don't let this put you off; if we have to carry your wheelchair up the hill with you in it, then so be it.

TTI is a smoking venue and visitors may smoke as much as they like (ashtrays will be provided).

## **19 FINALLY**

Please address all queries to Mike Towler whose email address is `mdt26 at cam.ac.uk`.

HAVE FUN AT THE SUMMER SCHOOL!