

08:00

<b>Registration</b>					
09:00	<p>Reception, Gran Sasso Science Institute 08:30 - 09:20</p> <p><b>Presentation of the School</b> COCCIA, Eugenio et al.</p> <p>Main Lecture Hall, Gran Sasso Science Institute 09:20 - 10:00</p>				
10:00	<table border="1"> <tr> <td> <p><b>A short phenomenological description of the elementary particles; outline of quantum mechanics; outline of the restricted relativity</b> FIORENTINI, Giovanni</p> <p>Room A, Gran Sasso Science Institute 10:00 - 12:00</p> </td> <td> <p><b>Origin and evolution of the Earth. Composition. Methods to study the Earth: geology, mineralogy, petrology, geochemistry, geodynamics</b> MCDONOUGH, William</p> <p>Room B, Gran Sasso Science Institute 10:00 - 12:00</p> </td> </tr> <tr> <td> <p><b>Cosmic rays</b> CHIAVASSA, Andrea</p> <p>Room A, Gran Sasso Science Institute 12:00 - 13:00</p> </td> <td> <p><b>Geodynamic picture of the Earth</b> SRAMEK, Ondrej</p> <p>Room B, Gran Sasso Science Institute 12:00 - 13:00</p> </td> </tr> </table>	<p><b>A short phenomenological description of the elementary particles; outline of quantum mechanics; outline of the restricted relativity</b> FIORENTINI, Giovanni</p> <p>Room A, Gran Sasso Science Institute 10:00 - 12:00</p>	<p><b>Origin and evolution of the Earth. Composition. Methods to study the Earth: geology, mineralogy, petrology, geochemistry, geodynamics</b> MCDONOUGH, William</p> <p>Room B, Gran Sasso Science Institute 10:00 - 12:00</p>	<p><b>Cosmic rays</b> CHIAVASSA, Andrea</p> <p>Room A, Gran Sasso Science Institute 12:00 - 13:00</p>	<p><b>Geodynamic picture of the Earth</b> SRAMEK, Ondrej</p> <p>Room B, Gran Sasso Science Institute 12:00 - 13:00</p>
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14:00	<p>Canteen, Gran Sasso Science Institute 13:00 - 14:30</p>				
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<b>Break</b>					
16:30 - 16:45					
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18:00					
19:00					

## Tue 12/7

09:00	<b>A short phenomenological description of the elementary particles; outline of quantum mechanics; outline of the restricted relativity</b>  <i>FIorentINI, Giovanni</i>  <i>Room A, Gran Sasso Science Institute</i> 09:00 - 11:00	<b>Origin and evolution of the Earth. Composition. Methods to study the Earth: geology, mineralogy, petrology, geochemistry, geodynamics</b>  <i>MCDONOUGH, William</i>  <i>Room B, Gran Sasso Science Institute</i> 09:00 - 11:00
10:00		
11:00	<b>Break</b>  11:00 - 11:30	
12:00	<b>Particle detection techniques</b>  <i>RANUCCI, Giacchino</i>  <i>Room A, Gran Sasso Science Institute</i> 11:30 - 12:30	<b>Basics of seismology and Earth structure</b>  <i>CAMMARANO, Fabio</i>  <i>Room B, Gran Sasso Science Institute</i> 11:30 - 12:30
13:00	<b>Lunch</b>  <i>Canteen, Gran Sasso Science Institute</i> 12:30 - 14:00	
14:00	<b>Cosmic rays</b>  <i>CHIavASSA, Andrea</i>  <i>Room A, Gran Sasso Science Institute</i> 14:00 - 15:00	<b>Geodynamic picture of the Earth; basic of heat flow</b>  <i>SRAMEK, Ondrej</i>  <i>Room B, Gran Sasso Science Institute</i> 14:00 - 15:00
15:00	<b>Particle detection techniques</b>  <i>RANUCCI, Giacchino</i>  <i>Room A, Gran Sasso Science Institute</i> 15:00 - 16:00	<b>Basics of seismology and Earth structure</b>  <i>CAMMARANO, Fabio</i>  <i>Room B, Gran Sasso Science Institute</i> 15:00 - 16:00
16:00	<b>Break</b>  <i>Main Lecture Hall; Room A; Library</i> 16:00 - 16:30	
17:00	<b>Discussion</b>  <i>Room A, Gran Sasso Science Institute</i> 16:30 - 18:00	<b>Discussion</b>  <i>Room B, Gran Sasso Science Institute</i> 16:30 - 18:00
18:00		

09:00	<b>Neutrino physics and detection methods</b>	<i>CHEN, Mark</i>
10:00		
	<i>Room D, Gran Sasso Science Institute</i>	09:00 - 11:00
11:00	<b>Break</b>	11:00 - 11:30
	<b>Earth mineralogy and its phase transition</b>	<i>MCDONOUGH, William</i>
12:00		
	<i>Room D, Gran Sasso Science Institute</i>	11:30 - 12:30
	<b>Lunch</b>	
13:00		
	<i>Canteen, Gran Sasso Science Institute</i>	12:30 - 14:00
14:00	<b>Thermal evolution of the Earth</b>	<i>SRAMEK, Ondrej</i>
	<i>Room D, Gran Sasso Science Institute</i>	14:00 - 15:00
15:00	<b>Mineralogy and petrology</b>	<i>TSUCHIYA, Taku</i>
	<i>Room D, Gran Sasso Science Institute</i>	15:00 - 16:00
16:00	<b>Break</b>	16:00 - 16:20
	<b>Time-resolved two million year old supernova activity, discovered in the Earth's microfossil record</b>	<i>BISHOP, Shawn</i>
	<i>Room D, Gran Sasso Science Institute</i>	16:20 - 17:00
17:00	<b>Discussion</b>	
18:00		
	<i>Room D, Gran Sasso Science Institute</i>	17:00 - 18:30

Thu 14/7

09:00	<b>Neutrino physics and detection methods</b> <i>Room D, Gran Sasso Science Institute</i>	<i>CHEN, Mark</i> 09:00 - 10:00
10:00	<b>Geochemical model of the Earth</b> <i>Room D, Gran Sasso Science Institute</i>	<i>MCDONOUGH, William</i> 10:00 - 11:00
11:00	<b>Break</b>	11:00 - 11:30
12:00	<b>Radioactive nuclides and decay</b> <i>Room D, Gran Sasso Science Institute</i>	<i>CREMONESI, Oliviero</i> 11:30 - 12:30
13:00	<b>Lunch</b> <i>Canteen, Gran Sasso Science Institute</i>	12:30 - 14:00
14:00	<b>Distribution of radioactive nuclides in the Earth</b> <i>Room D, Gran Sasso Science Institute</i>	<i>MCDONOUGH, William</i> 14:00 - 15:00
15:00	<b>Discussion</b> <i>Main Lecture Hall, Gran Sasso Science Institute</i>	15:00 - 16:00
16:00	<b>Evaluation of the Earth's K-Th-U and He-Ne-Ar budgets</b> <i>Room A, Gran Sasso Science Institute</i>	<i>SRAMEK, Ondrej</i> 16:00 - 18:30
17:00		
18:00		
22:00	<b>Poster Session</b> <i>Floor -1, Gran Sasso Science Institute</i>	21:30 - 22:30

Fri 15/7

09:00	<b>Neutrino physics and detection methods</b>  <i>Room D, Gran Sasso Science Institute</i>	<i>CHEN, Mark</i>  09:00 - 10:00
10:00	<b>Muon and their detection</b>  <i>Room D, Gran Sasso Science Institute</i>	<i>CARLOGANU, Cristina</i>  10:00 - 11:00
11:00	<b>Break</b>	11:00 - 11:30
12:00	<b>Crust and mantle geodynamics and mantle convection</b>  <i>Room D, Gran Sasso Science Institute</i>	<i>TSUCHIYA, Taku</i>  11:30 - 12:30
13:00	<b>Lunch</b>	12:30 - 14:00
14:00	<b>The Earth's heat budget</b>  <i>Room D, Gran Sasso Science Institute</i>	<i>SRAMEK, Ondrej</i>  14:00 - 15:00
15:00	<b>Discussion</b>  <i>Main Lecture Hall, Gran Sasso Science Institute</i>	15:00 - 16:00
16:00	<b>Visit to the Gran Sasso National Laboratory. Departure from the main entrance of the GSSI, at 16.00.</b>	
17:00		
18:00		
19:00	<i>Underground Laboratory, LNGS</i>	16:00 - 19:00

09:00	<b>Geoneutrinos: origin, detection, background (from reactors and other sources), current geoneutrino measurements, future on geoneutrinos</b>					<i>LUDHOVA, Livia</i>
10:00						
	<i>Room D, Gran Sasso Science Institute</i>					09:00 - 11:00
11:00	<b>Break</b>					11:00 - 11:30
12:00	<b>How to measure 40K</b>					<i>CHEN, Mark</i>
	<i>Room D, Gran Sasso Science Institute</i>					11:30 - 12:30
13:00	<b>Lunch</b>					
	<i>Canteen, Gran Sasso Science Institute</i>					12:30 - 14:00
14:00	<b>Discussion</b>					
	<i>Main Lecture Hall, Gran Sasso Science Institute</i>					14:00 - 14:30
15:00	<b>Group 1 - Extraction of the geoneutrino flux from the experimental event distribution</b>	<b>Group 2 - Extraction of the geoneutrino flux from the experimental event distribution</b>	<b>Group 3 - Extraction of the geoneutrino flux from the experimental event distribution</b>	<b>Group 4 - Extraction of the geoneutrino flux from the experimental event distribution</b>	<b>Group 5 - Extraction of the geoneutrino flux from the experimental event distribution</b>	
16:00						
17:00						
18:00	<i>Library, Gran Sasso Science Institute</i>	<i>Library, Gran Sasso Science Institute</i>	<i>Library, Gran Sasso Science Institute</i>	<i>Library, Gran Sasso Science Institute</i>	<i>Library, Gran Sasso Science Institute</i>	

09:00	<b>Geoneutrinos: origin, detection, background (from reactors and other sources), current geoneutrino measurement, future on geoneutrinos</b> <span style="float: right;"><i>LUDHOVA, Livia</i></span>				
	<i>Room D, Gran Sasso Science Institute</i> <span style="float: right;">09:00 - 10:00</span>				
10:00	<b>Evaluation of local contribution</b> <span style="float: right;"><i>MANTOVANI, Fabio</i></span>				
	<i>Room D, Gran Sasso Science Institute</i> <span style="float: right;">10:00 - 11:00</span>				
11:00	<b>Break</b> <span style="float: right;">11:00 - 11:30</span>				
	<b>Volcano structure and eruption</b> <span style="float: right;"><i>MACEDONIO, Giovanni</i></span>				
12:00	<i>Room D, Gran Sasso Science Institute</i> <span style="float: right;">11:30 - 12:30</span>				
	<b>Lunch</b>				
13:00	<i>Canteen, Gran Sasso Science Institute</i> <span style="float: right;">12:30 - 14:00</span>				
14:00	<b>Discussion</b> <span style="float: right;">14:00 - 14:30</span>				
	<i>Room D, Gran Sasso Science Institute</i>				
15:00	<b>Group 1 - Calculation of antineutrino rate from the reactors</b>	<b>Group 2 - Calculation of antineutrino rate from the reactors</b>	<b>Group 3 - Calculation of antineutrino rate from the reactors</b>	<b>Group 4 - Calculation of antineutrino rate from the reactors</b>	<b>Group 5 - Calculation of antineutrino rate from the reactors</b>
16:00					
17:00					
18:00	<i>Library, Gran Sasso Science Institute</i>	<i>Library, Gran Sasso Science Institute</i>	<i>Library, Gran Sasso Science Institute</i>	<i>Library, Gran Sasso Science Institute</i>	<i>Library, Gran Sasso Science Institute</i>

## Tue 19/7

09:00	<b>Neutrino tomography (generalities)</b>	<i>WINTER, Walter</i>
	<i>Room D, Gran Sasso Science Institute</i>	09:00 - 10:00
10:00	<b>Neutrino tomography (experiments)</b>	<i>VANELEWYCK, VÃ©ronique</i>
	<i>Room D, Gran Sasso Science Institute</i>	10:00 - 11:00
11:00	<b>Break</b>	11:00 - 11:30
	<b>Muography techniques, study of volcanoes perspective</b>	<i>CARLOGANU, Cristina</i>
12:00	<i>Room D, Gran Sasso Science Institute</i>	11:30 - 12:30
	<b>Lunch</b>	
13:00	<i>Canteen, Gran Sasso Science Institute</i>	12:30 - 14:00
14:00	<b>Muography applied to the archeology</b>	<i>MARTEAU, Jaques</i>
	<i>Room D, Gran Sasso Science Institute</i>	14:00 - 14:40
	<b>Discussion</b>	
15:00	<i>Room D, Gran Sasso Science Institute</i>	14:40 - 15:40
	<b>Break</b>	15:40 - 16:00
16:00	<b>Calculating the Earth heat and the neutrino luminosity</b>	<i>MCDONOUGH, William</i>
17:00		
18:00	<i>Room A, Gran Sasso Science Institute</i>	16:00 - 18:30



09:00	<b>Error estimation and propagation</b>  <i>Room D, Gran Sasso Science Institute</i>	<i>MANTOVANI, Fabio</i>  09:00 - 10:00
10:00	<b>Introduction</b>  <i>Room D, Gran Sasso Science Institute</i>	<i>CALLEGARI, Ivan</i>  10:00 - 11:30
11:00	<b>Geological survey of local area</b>  <i>Room D, Gran Sasso Science Institute</i>	<i>MANTOVANI, Fabio</i>  11:30 - 18:30
12:00		
13:00		
14:00		
15:00		
16:00		
17:00		
18:00	<i>Introduction - Room D; departure from GSSI at 11:30, Gran Sasso Science Institute</i>	

Thu 21/7

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09:00	<b>Muography techniques, study of volcanoes perspective</b>  <i>Room D, Gran Sasso Science Institute</i>	<i>CARLOGANU, Cristina</i>  09:00 - 10:00
10:00	<b>Directionality in neutrino detection</b>  <i>Room D, Gran Sasso Science Institute</i>	<i>WATANABE, Hiroko</i>  10:00 - 11:00
11:00	<b>Break</b>	11:00 - 11:20
	<b>IBD directionality measurement at the Double Chooz Experiment</b>  <i>Room D, Gran Sasso Science Institute</i>	<i>KANEDA, Michiru</i>  11:20 - 12:00
12:00	<b>Discussion</b>  <i>Room D, Gran Sasso Science Institute</i>	12:00 - 13:00
13:00	<b>Lunch</b>	
14:00	<i>Canteen, Gran Sasso Science Institute</i>	13:00 - 14:30