

Workshop on  
**Nuclear Reaction Data and Nuclear Reactors:  
Physics, Design and Safety**

13 March - 14 April 2000

*Miramare - Trieste, Italy*

**PRELIMINARY PROGRAMME**

**VENUE:** ADRIATICO GUEST HOUSE

**LECTURES:** WEEKS I & IV - SMALL LECTURE ROOM

WEEKS II, III & V - MAIN LECTURE ROOM

**TUTORIALS:** INFORMATICS LABORATORY - Lower level 2



# WORKSHOP ON NUCLEAR REACTION DATA AND NUCLEAR REACTORS: Physics, Design and Safety

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Director: M. Herman

## WEEK I (13-17 March) REACTIONS I: (Theory and Practice of Nuclear Reactions)

DAY TIME	Monday 13 March	Tuesday 14 March	Wednesday 15 March	Thursday 16 March	Friday 17 March
08:30 - 10:00	8:30 - 9:30 REGISTRATION  <b>ADMINISTRATIVE FORMALITIES</b> 10:30 - 11:15 <b>Opening &amp;</b> Workshop Overview M. Herman, IAEA N. Paver, ICTP	Optical model (2)  B. Carlsson	Optical model (3)  B. Carlsson	Neutron Resonances Introduction to SAMMY (3)  L. Leal	Neutron Resonances Introduction to SAMMY (4)  L. Leal
10:00 - 10:30	<b>COFFEE BREAK</b>				
10:30 - 12:00	11:15 - 12:15 Introduction to ICTP Computer Resources A. Nobile	Neutron Resonances Introduction to SAMMY (1)  N. Larson	Neutron Resonances Introduction to SAMMY (2)  N. Larson	Actinide Neutron- Induced Fission (1)  V. Maslov	Actinide Neutron- Induced Fission (2)  V. Maslov
12:00 - 14:00	<b>LUNCH BREAK</b>				
14:00 - 15:30	Optical model 1  B. Carlsson	Code ECIS (Exercise)  B. Carlsson	Code ECIS (Exercise)  B. Carlsson	Code SAMMY (Exercise)  N. Larson	Code SAMMY (Exercise)  N. Larson
15:30 - 16:00	<b>COFFEE BREAK</b>				
16:00 - 17:30	Get familiar with ICTP Computers  P. McLaughlin	Code ECIS (Exercise)  B. Carlsson	Code ECIS (Exercise)  B. Carlsson	Code SAMMY (Exercise)  N. Larson	Code SAMMY (Exercise)  N. Larson
20:00 - 21:00	18:30 <b>SMALL RECEPTION</b>		Participants' Self-introduction		

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**WEEK II (20-24 March) REACTIONS 2: (Present and Future of Nuclear Data Evaluation)**

<b>D A Y  T I M E</b>	<b>Monday 20 March</b>	<b>Tuesday 21 March</b>	<b>Wednesday 22 March</b>	<b>Thursday 23 March</b>	<b>Friday 24 March</b>
<b>08:30 - 10:00</b>	Introduction to EMPIRE (1) <b>M. Herman</b>	Introduction to EMPIRE (2) <b>M. Herman</b>	Level densities <b>S. Hilaire</b>	Nuclear data at high energies: Experiment and Theory <b>S. Leray</b>	Reference input parameter library <b>M. Herman</b>
<b>10:00 - 10:30</b>	<b>COFFEE BREAK</b>				
<b>10:30 - 12:00</b>	Demonstration of code STAPRE <b>V. Maslov</b>	Statistical nuclear reactions <b>S. Hilaire</b>	Nuclear data evaluations: Introduction <b>A. Koning</b>	Nuclear data project at CERN: motivation <b>P. Pavlopoulos</b>	Nuclear data project at CERN: facility <b>P. Pavlopoulos</b>
<b>12:00 - 14:00</b>	<b>LUNCH BREAK</b>				
<b>14:00 - 15:30</b>	Code SAMMY (Exercise) <b>L. Leal</b>	Code EMPIRE (Exercise) <b>M. Herman</b>	Selected papers of participants <b>Participants/A. Koning</b>	Nuclear physics in the 21 <sup>st</sup> century: Models <b>A. Ignatyuk</b>	Nuclear data at high energies: Applications <b>S. Leray</b>
<b>15:30 - 16:00</b>	<b>COFFEE BREAK</b>				
<b>16:00 - 17:30</b>	Code SAMMY (Exercise) <b>L. Leal</b>	Code EMPIRE (Exercise) <b>M. Herman</b>	Selected papers of participants <b>Participants/A. Koning</b>	Code EMPIRE (Exercise) <b>M. Herman</b>	Nuclear physics in the 21 <sup>st</sup> century: Data <b>A. Ignatyuk</b>
<b>20:00 - 21:00</b>	IAEA Nuclear data program <b>M. Herman</b>				

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<b>WEEK III (27-31 March) PROCESSING: (Nuclear Data Processing)</b>				<b>Director: A. Trkov</b>	
<b>D A Y</b>	<b>Monday 27 March</b>	<b>Tuesday 28 March</b>	<b>Wednesday 29 March</b>	<b>Thursday 30 March</b>	<b>Friday 31 March</b>
<b>TIME</b>					
<b>08:30 - 10:00</b>	Nuclear Data Services Provided by the IAEA <b>O. Schwerer</b>	ENDF-6 Formats and Procedures <b>R. MacFarlane</b>	Introduction to NJOY (2) <b>R. MacFarlane</b>	Introduction to NJOY (3) <b>R. MacFarlane</b>	Processing of Nuclear Data for Applications <b>A. Trkov</b>
<b>10:00 - 10:30</b>	<b>COFFEE BREAK</b>				
<b>10:30 - 12:00</b>	Introduction to Processed Nuclear Data <b>A. Trkov</b>	Introduction to NJOY (1) <b>R. MacFarlane</b>	Introduction to the Neutron Transport Phenomena <b>T. Kulikowska</b>	Reactor Lattice Transport Calculations <b>T. Kulikowska</b>	Reactor Lattice Codes <b>T. Kulikowska</b>
<b>12:00 - 14:00</b>	<b>LUNCH BREAK</b>				
<b>14:00 - 15:30</b>	IAEA Nuclear Data Services (Exercise) <b>O. Schwerer</b>	CODE NJOY (Exercise) <b>R. MacFarlane</b>	CODE NJOY (Exercise) <b>R. MacFarlane</b>	CODE NJOY (Exercise) <b>R. MacFarlane</b>	Presentations by participants <b>Participants/A. Trkov</b>
<b>15:30 - 16:00</b>	<b>COFFEE BREAK</b>				
<b>16:00 - 17:30</b>	IAEA Nuclear Data Services (Exercise) <b>O. Schwerer</b>	CODE NJOY (Exercise) <b>R. MacFarlane</b>	CODE NJOY (Exercise) <b>R. MacFarlane</b>	CODE NJOY (Exercise) <b>R. MacFarlane</b>	Presentations by participants <b>Participants/A. Trkov</b>
<b>20:00 - 21:00</b>	NEA Computer Codes <b>E. Sarfori</b>				

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WEEK IV (3-7 April) REACTORS 1: (Advanced Nuclear Systems for Energy Generation)		Director: J. Kupitz			
DAY	Monday 3 April	Tuesday 4 April	Wednesday 5 April	Thursday 6 April	Friday 7 April
TIME					
08:30 - 10:00	Status and trends in advanced nuclear power plants development and applications J. Kupitz	Small and Medium Reactors: Development status and application aspects J. Kupitz	Research Reactors performance and safety M. Ravnik	ADS and Transmutation of Nuclear Waste: Options and Trends A. Stanculescu	Operational Performance of Nuclear Reactors and IAEA Power Reactors Information System (PRIS) R. Spiegelberg
10:00 - 10:30	<b>COFFEE BREAK</b>				
10:30 - 12:00	Simulation of the behaviour of small and medium nuclear reactors on PC's (1) R. Lyon	Simulation of the behaviour of small and medium nuclear reactors on PC's (2) R. Lyon	Introduction to the Neutron Transport Phenomena T. Kulikowska	Reactor Lattice Transport Calculations T. Kulikowska	Comparative assessment of different energy sources and their potential role in long-term sustainable energy mix V. Kragamanian
12:00 - 14:00	<b>LUNCH BREAK</b>				
14:00 - 15:30	Computer Exercises (1) R. Lyon	Computer Exercises (2) R. Lyon	Computer Exercises (1) M. Ravnik	Computer Exercises (2) M. Ravnik	Workshop papers presented by participants on Advanced Reactors Participants/J. Kupitz
15:30 - 16:00	<b>COFFEE BREAK</b>				
16:00 - 17:30	Computer Exercises (1) R. Lyon	Computer Exercises (2) R. Lyon	Computer Exercises (1) M. Ravnik	Computer Exercises (2) M. Ravnik	Workshop papers presented by participants on Advanced Reactors Participants/J. Kupitz

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**WEEK V (10-14 April) REACTORS 2: (Design and Safety of proven and Advanced Power Reactors Plants)** Director: **A. Gandini**

D A Y  T I M E	Monday 10 April	Tuesday 11 April	Wednesday 12 April	Thursday 13 April	Friday 14 April
08:30 - 10:00	Principles of nuclear safety (1)  M. Curno	Medium and long-term scenarios for fission nuclear energy and role of innovative concepts (1)	Medium and long-term scenarios for fission nuclear energy and role of innovative concepts (2)	Medium and long-term scenarios for fission nuclear energy and role of innovative concepts (3)	Reactor Dynamics (1)
10:00 - 10:30	M. Curno	M. Salvatore	M. Salvatore	M. Salvatore	S. Corno
<b>COFFEE BREAK</b>					
10:30 - 12:00	Principles of nuclear safety (2)  M. Curno	Physical mock-up Experiments and their analysis (2)	Neutronic design of a pressurised power reactor	Project code chains - functionality - data base handling	Dynamics of subcritical systems (1)
12:00 - 14:00		R. Soule	G. Bruna	G. Bruna	P. Ravetto
<b>LUNCH BREAK</b>					
14:00 - 15:30	Advanced Methods for safety and performance analysis (1)  M. Marseguerra	Advanced Methods for safety and performance analysis (2)	Long term radiotoxicity	Advanced ADS concepts	Reactor Dynamics (2)
15:30 - 16:00		M. Marseguerra	I. Slessarev	I. Slessarev	S. Corno
<b>COFFEE BREAK</b>					
16:00 - 17:30	Physical mock-up Experiments and their analysis (1)  R. Soule	Engineering oriented mock-ups	New reactors concepts and scenarios	Reactor operation: Control strategy	Dynamics of subcritical systems (2)
		R. Soule	A. Gandini	G. Bruna	P. Ravetto

