

International Winter School on Gravity and Light
Monday, 2 February to Saturday, 28 February 2015 in Linz

Week 1	Sun, 1	Mon, 2	Tue, 3	Wed, 4	Thu, 5	Fri, 6	Sat, 7
08:00-09:00							
09:00-10:15		Topology		Tensors		Tangents	
10:15-10:45							
10:45-12:00		Manifolds		Diff Mflds		Fields	
12:00-14:00							
14:00-16:00		Tutorials		Tutorials		Tutorial	
16:00-16:30							
16:30-18:00							
18:00-20:00							
20:00-21:00							
Week 2	Sun, 8	Mon, 9	Tue, 10	Wed, 11	Thu, 12	Fri, 13	Sat, 14
08:00-09:00							
09:00-10:15		Derivatives		Newton		Geodesics	
10:15-10:45							
10:45-12:00		Curvature		Metric		Symmetry	
12:00-14:00							
14:00-16:00		Tutorials		Tutorials		Tutorial	
16:00-16:30							
16:30-18:00							
18:00-20:00							Dinner
20:00-21:00							Welcome

Week 3	Sun, 15	Mon, 16	Tue, 17	Wed, 18	Thu, 19	Fri, 20	Sat, 21
08:00-09:00				Breakfast			
09:00-10:15	Revision	Spacetime	PhysAppl	Lensing	Ars Electronica Center	PhysAppl	Cosmology
10:15-10:45				Coffee			
10:45-12:00	Revision	Matter	PhysAppl	Lensing		PhysAppl	Dark stuff
12:00-14:00				Lunch			
14:00-16:00	Revision	Einst Eqn	History	Tutorials		History	Tutorials
16:00-16:30				Coffee			
16:30-18:00	Exam I	Tutorial 1	Tutorial 2		Canonical	Canonical	
18:00-20:00		Obsrv 2	Obsrv 1	Dinner			
20:00-21:00	Opera			QuantGrav			

Week 4	Sun, 22	Mon, 23	Tue, 24	Wed, 25	Thu, 26	Fri, 27	Sat, 28
08:00-09:00				Breakfast			Exam II
09:00-10:15		Diagrams	PhysAppl	Perturb	PhysAppl	ModMatter	StudTalks
10:15-10:45				Coffee			
10:45-12:00		Black Hs	PhysAppl	Perturb	PhysAppl	ModGrav	StudTalks
12:00-14:00				Lunch			
14:00-16:00		Tutorials	History	Tutorials	History	Tutorials	Discussion
16:00-16:30				Coffee			
16:30-18:00		Microwave	Microwave		GravWaves	GravWaves	Certificates
18:00-20:00				Dinner			
20:00-21:00	Microwave			GravWaves			Party

Central Lecture	Elementary Tutorial	Info & Organisation	Excursions
Satellite Lecture	Advanced Tutorial	History	ECTS Exams

Lecturers:



Frederic P. Schuller



Domenico Giulini



Markus C. Werner



Valerie Pettorino

and Bernard F. Schutz

Possible Tracks of Study for JKU Students

Track 1 General Relativity (without Applications)

Central Lectures	Elementary Tutorials
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This track contains the bare minimum of a course on general relativity, with all technical calculations practised step by step in the Elementary Tutorials. This is a worthwhile track of study if one wishes to learn the mathematical and conceptual ideas behind general relativity.

Track 2 General Relativity (with Simple Applications)

Central Lectures	Elementary Tutorials	Advanced Tutorials
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This track additionally includes the guided exploration of the most important simple applications of general relativity, including the classical solar system tests and thus presents an introductory course on general relativity, but without modern applications of current research interest.

Track 3 General Relativity and Light (with Modern Research Applications)

Central Lectures	Elementary Tutorials	Advanced Tutorials
Satellite Lectures		

This track constitutes a complete modern course on general relativity and light, including modern applications and theoretical directions that point to deep issues, such as the origin of the Einstein equations and the ultimate formulation of a quantum theory of gravity.

Track 4 Complete Immersion Course on General Relativity and Light

Central Lectures	Elementary Tutorials	Advanced Tutorials
Satellite Lectures		
History		
Excursions		

This track offers a full-fledged complete immersion course on general relativity and light, with the mathematical, physical and research aspects of the field being developed in full detail and supplemented by historical considerations and observational aspects. This is the option followed by the 50 international scholarship holders from 21 countries and presents a thorough introduction to the field that prepares the serious student to start research in this area.

Exam Options

There are four possible types of exam combinations according to Tracks 1 and 2 (Exam Option S1), according to Workshop-Track 3 and 4 (Exam Option S2), Track 3 (Exam Option M) and Track 4 (Exam Option L). You may decide shortly before the date of the corresponding exams (see the time table of the school) whether you wish to take the upcoming exam. It is strongly recommended that you attempt each exam, since this will insure a lasting learning effect from the school.

Option S1 (3ECTS)

Central Lectures
Elementary Tutorials
Exam I (after week 2)

Option S2 (3ECTS)

Central Lectures
Satellite Lectures
Student Presentation

Option M (6 ECTS)

Central Lectures
Satellite Lectures
Elementary Tutorials
Advanced Tutorials
Exam I (after week 2)
Exam II (after week 4)

Option L (9 ECTS)

Central Lectures
Satellite Lectures
Elementary Tutorials
Advanced Tutorials
History
Excursions
Exam I (after week 2)
Exam II (after week 4)
StudPres (after week 4)