

JUAS 2023 - PROGRAM

(COURSE 1)

WEEK #1



	9 Jan. Monday	10 Jan. Tuesday	11 Jan. Wednesday	12 Jan. Thursday	13 Jan. Friday
MORNING (From 9:00 to 12:00)		Transverse Beam Dynamics B. Holzer	Transverse Beam Dynamics B. Holzer	Transverse Beam Dynamics B. Holzer	Transverse Beam Dynamics B. Holzer
		Transverse Beam Dynamics B. Holzer	Transverse Beam Dynamics B. Holzer	Transverse Beam Dynamics B. Holzer	Transverse Beam Dynamics B. Holzer
		Transverse Beam Dynamics B. Holzer	Transverse Beam Dynamics B. Holzer	Transverse Beam Dynamics B. Holzer	Transverse Beam Dynamics B. Holzer
AFTERNOON (From 13:30 onwards)	OFFICIAL OPENING: Presentation of JUAS & Introduction of students <i>E. Metral, B. Holland, S. Vandergooten</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>
	Special relativity, electromagnetism, classical and quantum mechanics: What to remember for particle accelerators <i>E. Metral</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>
	Particle Accelerators in the 21st century Seminar <i>M. Vretenar</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>	Longitudinal Beam Dynamics <i>A. Lasheen</i>
	CHECK-IN AT THE RESIDENCE & SHOPPING FOR GROCERIES	Introduction to CERN & its Accelerator Complex Seminar <i>R. Alemany</i>			

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WEEK #2



	16 Jan. Monday	17 Jan. Tuesday	18 Jan. Wednesday	19 Jan. Thursday	20 Jan. Friday
MORNING (From 9:00 to 12:00)	Introduction to MAD-X <i>N. Fuster Martinez</i>	Introduction to PyHeadTail <i>B. Salvant</i>	PyHeadTail workshop <i>B. Salvant</i>	Linacs <i>D. Alesini</i>	Linacs <i>D. Alesini</i>
	Transverse Beam Dynamics (exam preparation) <i>B. Holzer</i>	Longitudinal Beam Dynamics (exam preparation) <i>A. Lasheen</i>	PyHeadTail workshop <i>B. Salvant</i>	Linacs <i>D. Alesini</i>	Linacs <i>D. Alesini</i>
	Transverse Beam Dynamics (exam preparation) <i>B. Holzer</i>	Longitudinal Beam Dynamics (exam preparation) <i>A. Lasheen</i>	PyHeadTail workshop <i>B. Salvant</i>	Linacs <i>D. Alesini</i>	Linacs <i>D. Alesini</i>
AFTERNOON (From 13:30 onwards)	MADX workshop <i>N. Fuster Martinez</i>	MADX workshop <i>N. Fuster Martinez</i>	Linacs <i>D. Alesini</i>	Transverse linear imperfections <i>H. Bartosik</i>	Transverse linear imperfections <i>H. Bartosik</i>
	MADX workshop <i>N. Fuster Martinez</i>	MADX workshop <i>N. Fuster Martinez</i>	Linacs <i>D. Alesini</i>	Transverse linear imperfections <i>H. Bartosik</i>	Transverse linear imperfections <i>H. Bartosik</i>
	MADX workshop <i>N. Fuster Martinez</i>	MADX workshop <i>N. Fuster Martinez</i>	Transverse linear imperfections <i>H. Bartosik</i>	Transverse linear imperfections <i>H. Bartosik</i>	Transverse linear imperfections <i>H. Bartosik</i>
			Transverse linear imperfections <i>H. Bartosik</i>		

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WEEK #3



	23 Jan. Monday	24 Jan. Tuesday	25 Jan. Wednesday	26 Jan. Thursday	27 Jan. Friday	
MORNING (From 9:00 to 12:00)	WRITTEN EXAMINATION <u>Transverse beam dynamics</u>	Cyclotrons & FFAs <i>B. Jacquot</i>	Synchrotron Radiation <i>R. Ischebeck</i>	Synchrotron Radiation <i>R. Ischebeck</i>	Synchrotron Radiation <i>R. Ischebeck</i>	
	WRITTEN EXAMINATION <u>Longitudinal beam dynamics</u>	Cyclotrons & FFAs <i>B. Jacquot</i>	Synchrotron Radiation <i>R. Ischebeck</i>	Synchrotron Radiation <i>R. Ischebeck</i>	Synchrotron Radiation <i>R. Ischebeck</i>	
		Cyclotrons & FFAs <i>B. Jacquot</i>	Synchrotron Radiation <i>R. Ischebeck</i>	Synchrotron Radiation <i>R. Ischebeck</i>	Synchrotron Radiation (exam preparation) <i>R. Ischebeck</i>	
AFTERNOON (From 13:30 onwards)	Trip to CERN	Dedicated session on COLLIDERS 1) LHC & HL-LHC (<i>O. Brüning</i>) 2) Nuclear collisions at the LHC (<i>J. Jowett</i>) 3) FCC-hh (<i>M. Giovannozzi</i>) 4) Electron-positron circular colliders (<i>F. Zimmermann</i>) 5) Future high-energy linear colliders (<i>P. Burrows</i>) 6) The US Electron-Ion Collider (<i>T. Satogata</i>) 7) Muon collider (<i>D. Schulte</i>)	Synchrotron Radiation <i>R. Ischebeck</i>	Synchrotron Radiation <i>R. Ischebeck</i>	Synchrotron Radiation (exam preparation) <i>R. Ischebeck</i>	
	Visit of the CERN LEIR accelerator <i>N. Biancacci</i>		Cyclotrons & FFAs <i>B. Jacquot</i>	Transverse nonlinear effects <i>H. Bartosik</i>	Transverse nonlinear effects <i>H. Bartosik</i>	
	Drink at CERN		Cyclotrons & FFAs <i>B. Jacquot</i>	Transverse nonlinear effects <i>H. Bartosik</i>	Transverse nonlinear effects <i>H. Bartosik</i>	
	Visit to ALICE experiment at the CERN LHC <i>J. Jowett</i>		Cyclotrons & FFAs <i>B. Jacquot</i>	Transverse nonlinear effects <i>H. Bartosik</i>	Transverse nonlinear manipulations Seminar <i>M. Giovannozzi</i>	
	Intro on Colliders (for tomorrow's afternoon session on Collider) Seminar <i>E. Métral</i>					
	Dinner at CERN					

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WEEK #4



	30 Jan. Monday	31 Jan. Tuesday	1 Feb. Wednesday	2 Feb. Thursday	3 Feb. Friday
MORNING (From 9:00 to 12:00)	Injection / Extraction <i>N. Carmignani</i>	Accelerator design <i>B. Härer</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>
	Injection / Extraction <i>N. Carmignani</i>	Accelerator design <i>B. Härer</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>
	Injection / Extraction <i>N. Carmignani</i>	Accelerator design <u>Workshop</u> <i>A. Oeftiger</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>
AFTERNOON (From 13:30 onwards)	Accelerator design <i>B. Härer</i>	Accelerator design <u>Workshop</u> <i>A. Oeftiger</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>	Collective effects (mainly space charge & instabilities) <i>M. Migliorati</i>
	Accelerator design <i>B. Härer</i>	Accelerator design <u>Workshop</u> <i>A. Oeftiger</i>	Accelerator design <u>Workshop</u> <i>A. Oeftiger</i>	Accelerator design <u>Workshop</u> <i>A. Oeftiger</i>	CERN LIU Project: Beam dynamics aspects & solutions Seminar G. Rumolo
	Accelerator design <i>B. Härer</i>	Accelerator design <u>Workshop</u> <i>A. Oeftiger</i>	Accelerator design <u>Workshop</u> <i>A. Oeftiger</i>	Accelerator design <u>Workshop</u> <i>A. Oeftiger</i>	Accelerator design <u>Workshop</u> <i>A. Oeftiger</i>
	Free-Electron Lasers Seminar <i>E. Prat Costa</i>	Accelerator design <u>Workshop</u> <i>A. Oeftiger</i>	Beam-based impedance measurements Seminar N. Biancacci	Novel High Gradient Particle Accelerators Seminar R. Assmann	Accelerator design <u>Workshop</u> <i>A. Oeftiger</i>

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(COURSE 1)

WEEK #5



	6 Feb. Monday	7 Feb. Tuesday	8 Feb. Wednesday	9 Feb. Thursday	10 Feb. Friday
MORNING (From 9:00 to 12:00)	PRIVATE STUDIES	PRIVATE STUDIES	PRIVATE STUDIES	Trip to ESRF	CHECK-OUT AT THE RESIDENCE
			WRITTEN EXAMINATION <u>Subject 4 (TBA mid week 4)</u>	Visit of ESRF: Intro, Scientific case & Facility <i>J-L. Revol</i>	Title of the seminar Seminar Speaker to be confirmed
					CLOSING SESSION Course 1 + Final Drink & lunch
AFTERNOON (From 13:30 onwards)	ORAL EXAMINATION Accelerator design	WRITTEN EXAMINATION <u>Synchrotron Radiation</u>	PRIVATE STUDIES	Visit of ESRF: Intro, Scientific case & Facility <i>J-L. Revol</i>	
	ORAL EXAMINATION Accelerator design			Visit of ESRF: Control room & Beamline <i>J-L. Revol</i>	
	ORAL EXAMINATION Accelerator design	PRIVATE STUDIES	WRITTEN EXAMINATION <u>Subject 5 (TBA mid week 4)</u>	Visit of ESRF: Control room & Beamline <i>J-L. Revol</i>	

JUAS 2023 - PROGRAM

(COURSE 2)

WEEK #6



	13 Feb. Monday	14 Feb. Tuesday	15 Feb. Wednesday	16 Feb. Thursday	17 Feb. Friday
MORNING (From 9:00 to 12:00)		Introduction to RF <i>A. Mostacci</i>	Introduction to RF <i>A. Mostacci</i>	RF Engineering <i>C. Vollinger, M. Wendt</i>	RF Engineering <i>C. Vollinger, M. Wendt</i>
		Introduction to RF <i>A. Mostacci</i>	RF Engineering <i>C. Vollinger, M. Wendt</i>	RF Engineering <i>C. Vollinger, M. Wendt</i>	RF Engineering <i>C. Vollinger, M. Wendt</i>
		Introduction to RF <i>A. Mostacci</i>	RF Engineering <i>C. Vollinger, M. Wendt</i>	RF Engineering <i>C. Vollinger, M. Wendt</i>	RF Engineering <i>C. Vollinger, M. Wendt</i>
AFTERNOON (From 13:30 onwards)	Presentation of JUAS / ESI & Practical info <i>E. Metral, B. Holland, S. Vandergooten</i>	Normal Conducting Magnets <u>INTRODUCTION</u> (Lect. #1) <i>T. Zickler</i>	Normal Conducting Magnets <u>MAGNET CONSTRUCTION</u> (Lect. #4) <i>T. Zickler</i>	Normal Conducting Magnets <u>CASE STUDY INTRODUCTION</u> (Lect. #7) <i>J. Bauche, T. Zickler</i>	Normal Conducting Magnets <u>CASE STUDY #2</u> (by sub-groups #6) <i>J. Bauche, T. Zickler</i>
	Particle accel., instruments of discovery in physics (Seminar) <i>P. Lebrun</i>	Normal Conducting Magnets <u>BASIC PRINCIPLES</u> (Lect. #2) <i>T. Zickler</i>	Normal Conducting Magnets <u>ANALYTICAL DESIGN</u> (Lect. #5) <i>T. Zickler</i>	Normal Conducting Magnets <u>CASE STUDY #1</u> (by sub-groups #6) <i>J. Bauche, T. Zickler</i>	Normal Conducting Magnets <u>CASE STUDY #3</u> (by sub-groups #6) <i>J. Bauche, T. Zickler</i>
	Introduction to CERN practical days Magnet, SC, RF, Vacuum, CLEAR <i>J. Bauche, J. Fleiter, F. Caspers, V. Baglin, R. Corsini</i>	Normal Conducting Magnets <u>MAGNET TYPES</u> (Lect. #3) <i>T. Zickler</i>	Normal Conducting Magnets <u>NUMERICAL DESIGN</u> (Lect. #6) <i>T. Zickler</i>	Normal Conducting Magnets <u>CASE STUDY #1 (Cont'd)</u> (by sub-groups #6) <i>J. Bauche, T. Zickler</i>	Normal Conducting Magnets <u>CASE STUDY #4</u> (by sub-groups #6) <i>J. Bauche, T. Zickler</i>

JUAS 2023 - PROGRAM

(COURSE 2)

WEEK #7



	20 Feb. Monday	21 Feb. Tuesday	22 Feb. Wednesday	23 Feb. Thursday	24 Feb. Friday
MORNING (From 9:00 to 12:00)	RF Engineering C. Vollinger, M. Wendt	RF Engineering C. Vollinger, M. Wendt	Superconducting RF Cavities F. Caspers	Vacuum systems V. Baglin & R. Kersevan	Vacuum systems V. Baglin & R. Kersevan
	RF Engineering C. Vollinger, M. Wendt	RF Engineering (exam preparation) C. Vollinger, M. Wendt	Superconducting RF Cavities F. Caspers	Vacuum systems V. Baglin & R. Kersevan	Vacuum systems V. Baglin & R. Kersevan
	RF Engineering C. Vollinger, M. Wendt	RF Engineering (exam preparation) C. Vollinger, M. Wendt	Materials for SCRF cavities: Beyond niobium (Seminar) S. Calatroni	Vacuum systems V. Baglin & R. Kersevan	Vacuum systems V. Baglin & R. Kersevan
AFTERNOON (From 13:30 onwards)	Normal Conducting Magnets <u>CASE STUDY</u> (Oral presentation by group/students) J. Bauche, L. Fiscarelli, T. Zickler	Superconductivity (intro): RF vs. magnets C. Antoine	Vacuum systems V. Baglin & R. Kersevan	Superconducting magnets P. Ferracin	Superconducting magnets P. Ferracin
	Normal Conducting Magnets <u>CASE STUDY</u> (Oral presentation by group/students) J. Bauche, L. Fiscarelli, T. Zickler	Superconductivity (intro): RF vs. magnets C. Antoine	Vacuum systems V. Baglin & R. Kersevan	Superconducting magnets P. Ferracin	Superconducting magnets P. Ferracin
	Normal Conducting Magnets <u>CASE STUDY</u> (Oral presentation by group/students) J. Bauche, L. Fiscarelli, T. Zickler	Superconductivity (intro): RF vs. magnets C. Antoine	Vacuum systems V. Baglin & R. Kersevan	Superconducting magnets P. Ferracin	Superconducting magnets P. Ferracin
	Normal Conducting Magnets <u>TUTORIAL</u> J. Bauche, L. Fiscarelli, T. Zickler	Cryogenics for Superconducting devices P. Lebrun	Vacuum systems V. Baglin & R. Kersevan	Superconducting magnets P. Ferracin	Superconducting magnets (exam preparation) P. Ferracin

JUAS 2023 - PROGRAM

(COURSE 2)

WEEK #8



	27 Feb. Monday	28 Feb. Tuesday	1 Mar. Wednesday	2 Mar. Thursday	3 Mar. Friday
MORNING (From 9:00 to 12:00)	WRITTEN EXAMINATION RF Engineering	Beam instrumentation <i>P. Forck</i>	Beam instrumentation <i>P. Forck</i>	Beam instrumentation <i>P. Forck</i>	Beam instrumentation <i>P. Forck</i>
	WRITTEN EXAMINATION Magnets (Normal & Superconducting) + report for NC from students to be given before (prep. for exam)	Beam instrumentation <i>P. Forck</i>	Beam instrumentation <i>P. Forck</i>	Beam instrumentation <i>P. Forck</i>	Beam instrumentation (exam preparation) <i>P. Forck</i>
		Beam instrumentation <i>P. Forck</i>	Beam instrumentation <i>P. Forck</i>	Beam instrumentation <i>P. Forck</i>	Beam instrumentation (exam preparation) <i>P. Forck</i>
AFTERNOON (From 13:30 onwards)	Trip to CERN	Particle Sources <i>T. Thuillier</i>	Particle Sources <i>T. Thuillier</i>	Virtual visit & Experimental work at Bergoz Instrumentation E. Touzain	Beam instrumentation (exam preparation) <i>P. Forck</i>
	Visit of LINAC4 A. Lombardi, J-B. Lallement	Particle Sources <i>T. Thuillier</i>	Particle Sources <i>T. Thuillier</i>	Virtual visit & Experimental work at Bergoz Instrumentation E. Touzain	Beam instrumentation (exam preparation) <i>P. Forck</i>
	(Drink at CERN)	Particle Sources <i>T. Thuillier</i>	Particle Sources <i>T. Thuillier</i>	Virtual visit & Experimental work at Bergoz Instrumentation E. Touzain	Energy recovery linacs Seminar M. Arnold
	Visit of AD ELENA C. Carli	Muon Colliders & associated technological challenges Seminar D. Schulte	Bench-impedance measurements & materials characterization Seminar N. Biancacci	Virtual visit & Experimental work at Bergoz Instrumentation E. Touzain	
	Visit of THIN FILM COATING FACILITIES P. Costa Pinto, W. Vollenberg				
	(Diner at CERN)				

JUAS 2023 - PROGRAM

(COURSE 2)

WEEK #9



	6 Mar. Monday	7 Mar. Tuesday	8 Mar. Wednesday	9 Mar. Thursday	10 Mar. Friday
MORNING (From 9:00 to 12:00)	Practical days at CERN RF / VACUUM / MAGNET	Practical days at CERN RF / VACUUM / MAGNET	High Power Proton Linacs S. Bousson	Low Energy Accelerators W. Mondelaers	Acc. for medical & industrial applications E. Vanderkraaij & J. Mandrillon
	Practical days at CERN RF / VACUUM / MAGNET	Practical days at CERN RF / VACUUM / MAGNET	High Power Proton Linacs S. Bousson	Low Energy Accelerators W. Mondelaers	Acc. for medical & industrial applications E. Vanderkraaij & J. Mandrillon
	Practical days at CERN RF / VACUUM / MAGNET	Practical days at CERN RF / VACUUM / MAGNET	High Power Proton Linacs S. Bousson	Low Energy Accelerators W. Mondelaers	Acc. for medical & industrial applications E. Vanderkraaij & J. Mandrillon
AFTERNOON (From 13:30 onwards)	Practical days at CERN RF / VACUUM / MAGNET	Practical days at CERN RF / VACUUM / MAGNET	Radiation safety X. Queralt	Survey and Alignment of Accelerators J-C. Gayde	Life-cycle and operability of particle accelerators S. Meyroneinc
	Practical days at CERN RF / VACUUM / MAGNET	Practical days at CERN RF / VACUUM / MAGNET	Radiation safety X. Queralt	Survey and Alignment of Accelerators J-C. Gayde	Life-cycle and operability of particle accelerators S. Meyroneinc
	Practical days at CERN RF / VACUUM / MAGNET	Practical days at CERN RF / VACUUM / MAGNET	Radiation safety X. Queralt	Survey and Alignment of Accelerators J-C. Gayde	Life-cycle and operability of particle accelerators S. Meyroneinc
			Accelerator driven system Seminar F. Bouly		

JUAS 2023 - PROGRAM

(COURSE 2)

WEEK #10



	13 Mar. Monday	14 Mar. Tuesday	15 Mar. Wednesday	16 Mar. Thursday	17 Mar. Friday
MORNING (From 9:00 to 12:00)	ORAL EXAMINATION Practical days @CERN	PRIVATE STUDIES	PRIVATE STUDIES	Trip to PSI	Trip back from PSI
	ORAL EXAMINATION Practical days @CERN		WRITTEN EXAMINATION Subject 4 (TBA mid week 9)		
	ORAL EXAMINATION Practical days @CERN				
AFTERNOON (From 13:30 onwards)	Trip to Geneva Hospital	WRITTEN EXAMINATION Beam instrumentation	PRIVATE STUDIES	Visit of PSI <i>R. Ischebeck</i>	CLOSING SESSION Course 2 + Final Drink & lunch
	Visit to Geneva Hospital			PSI: Accelerator Controls <i>E. Zimoch</i>	
	Radiation Oncology: Biology, Physics & Clinical Applications (Seminar) <i>A. Durham</i>	PRIVATE STUDIES	WRITTEN EXAMINATION Subject 5 (TBA mid week 9)	PSI: ProScan Introduction <i>JM. Schippers</i>	
				PSI: Machine learning Seminar <i>J. Snuverink</i>	
				PSI: Dielectric laser accelerators Seminar <i>B. Hermann</i>	