














Programme of the 13th Karlsruhe International School on Fusion Technologies






Wednesday 30/09/2020

9:00-9:15	Opening of the summer school	M. Ionescu-Bujor	
Topic 1: Introduction to fusion			
9:15-10:00	Future energy and the role for fusion	R. Kembleton	
10:00-10:45	Fusion and the characteristics of fusion power plants	R. Kembleton	
10:45-11:00	coffee break		
11:00-11:45	Basic physics of a tokamak	R. Kembleton	
11:45-12:30	DEMO and the route to fusion power (I)	J. Morris	
13:45-14:30	DEMO and the route to fusion power (II)	J. Morris	
Topic 2: Plasma physics			
14:30-15:15	Introduction to plasma physics (I)	B. Pégourié	
15:15-15:30	coffee break		
15:30-16:15	Introduction to plasma physics (II)	B. Pégourié	

Thursday 01/10/2020

Topic 3: Plasma heating technology and plasma diagnostics			
08:30-10:00	Gyrotrons	S. Illy	
10:00-10:15	coffee break and group photo		
10:15-11:15	Introduction to neutral beam injection technology	I. Turner	
11:15-12:15	Plasma diagnostics in fusion devices	R. Sabot	
13:15-14:45	Visit of Gyrotron Test Stand	S. Illy	
14:45-15:00	coffee break		
Topic 4: Neutronics and activation analysis			
15:00-16:30	Fusion neutronics – methods, data, applications	D. Leichtle	

Friday 02/10/2020

Topic 5: Blankets			
8:30-9:45	Basics of breeding blanket technology	L. Boccaccini	
9:45-10:45	Solid breeder and Liquid metal breeder blankets (European concepts)	F. Hernandez	
10:45-11:00	coffee break		
11:00-12:00	Tritium Processing in Breeding Blankets and Test Blanket Systems	I. Ricapito	
13:00-13:45	Tritium breeder materials	J. Heuser	
13:45-14:45	Magnetohydrodynamics of liquid metals	L. Bühler	

Sunday 04/10/2020

Excursion to
Speyer







11:30-22:00

Registration
required








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Monday 05/10/2020

Topic 6: The fuel cycle of a fusion reactor			
8:30 - 9:30	Fuel cycle I	C. Day	
9:30-9:45	coffee break		
9:45-10:30	Fuel cycle II	C. Day	
10:30-12:00	Visit to TLK	B.Bornschein	
Topic 7: Technology of magnetic confinement			
13:00-14:15	Superconductivity and magnet technology	W. Fietz	
14:15-14:30	coffee break		
14:30-15:30	High temperature superconductivity	M. Wolf	
15:30-16:30	Manufacturing of superconducting magnets	A. Hobl	




Tuesday 06/10/2020

Topic 8: Materials development for fusion reactors			
8:30-9:30	Structure and texture of metallic solids	M. Rieth	
9:30-9:45	coffee break		
9:45-10:45	High temperature materials	M. Rieth	
Topic 9: Divertors			
10:45-12:00	Divertors in magnetically-confined fusion devices	B. Ghidersa	
14:00-15:00	Manufacturing processes for High Heat Flux Components	E. Visca	
15:00-15:15	coffee break		
15:15-16:30	Visit to HELOKA facilities	B. Ghidersa	

Wednesday 07/10/2020

Topic 10: Remote handling, maintenance scheme			
9:00-10:30	Remote handling maintenance scheme	M. Mittwollen	
10:30-10:45	coffee break		
10:45-11:45	Assembling of Tokamak components	T. Mull	
11:45-12:45	Availability considerations for future fusion power plants	T. Mull	
Topic 11: Safety, socioeconomics and waste			
13:15-14:15	Practical Implementation of nuclear engineering aspects within the ITER Electron Cyclotron Launcher	P. Wouters	
14:15-15:15	General safety analysis approach and techniques	D.Dongiovanni	
15:15-15:30	coffee break		
Topic 12: Operating and planned facilities			
15:30-16:45	ITER	T. Hirai	

Thursday 08/10/2020

Topic 12: Operating and planned facilities			
8:30-9:15	JT-60SA	J. Bucalossi	
9:15-10:00	Tore Supra and the WEST project	J. Bucalossi	
10:00-10:15	coffee break		
10:15-11:00	ASDEX upgrade	W. Suttrop	
11:00-12:15	Wendelstein 7-X	R. Wolf	