

5th G-NMR School, Düsseldorf, March 6-10, 2023

Venue:

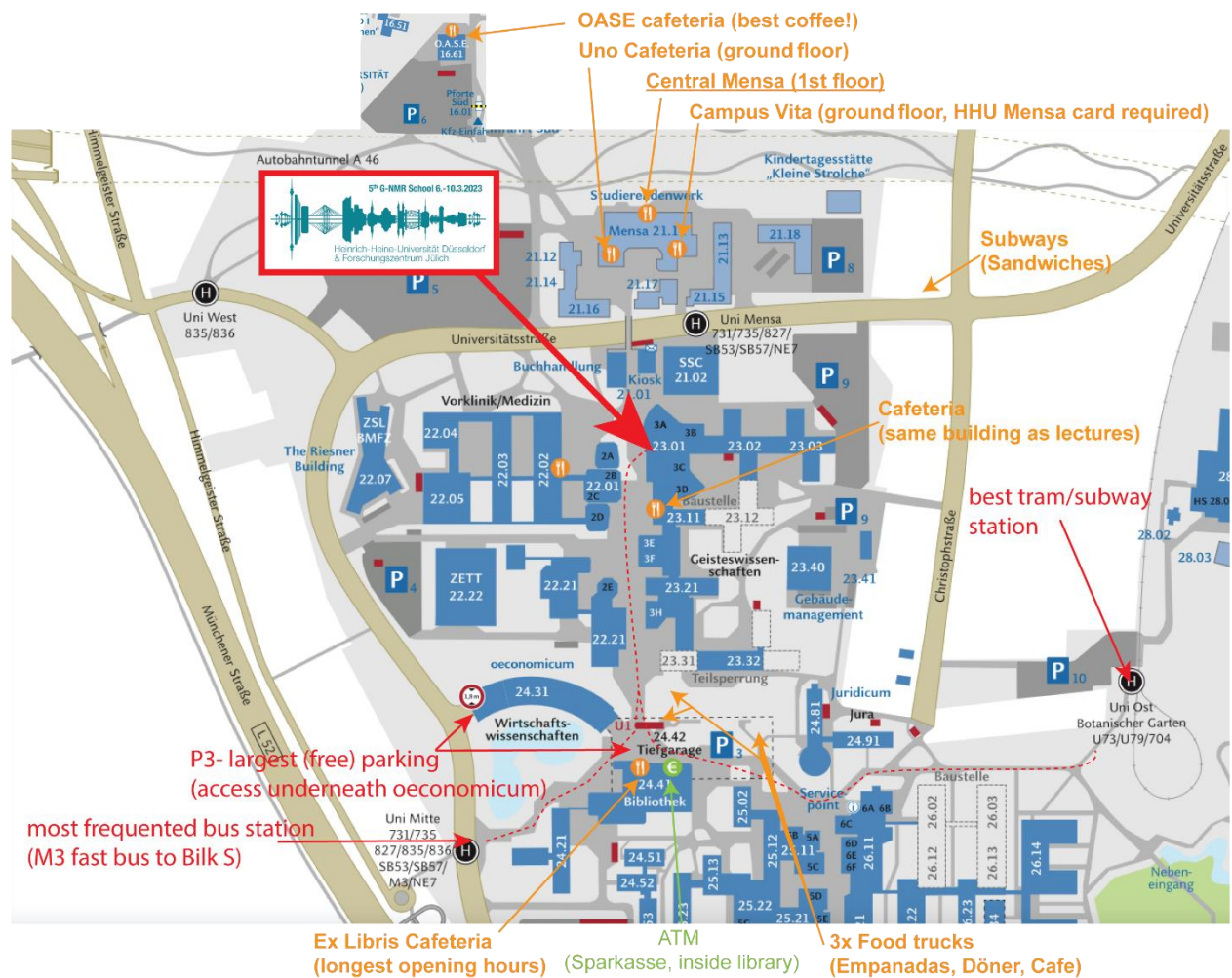
Heinrich-Heine-Universität Düsseldorf, Universitätsstr. 1

Building: 23.01.

Lecture halls 3 D,C,B

Program

Monday, March 6th, 8:30 AM: Registration opens



Timetable

		Mo (6.3.)	Tue (7.3.)	Wed (8.3.)	Thu (9.3.)	Fri (10.3.)
Lecture	hall	3D	3D	3D	3D	3
9:00-9:50		Opening and Introduction to the Jülich/Düsseldorf site (D. Willbold)	Anisotropic Interactions (B. Reif)	Phase Cycling / Gradients / Quadrature Detection (P.Schmieder)	3D NMR (M. Sattler)	Cross Correlated Relaxation, TROSY and more (C.Griesinger)
9:55-10:45		Product operators I (S.Glaser)	Anisotropic Interactions (B. Reif)	Phase Cycling / Gradients / Quadrature Detection (P.Schmieder)	Introduction to Protein Solid-state NMR (H.Oschkinat)	Integrative Structural Biology (G. Schröder)
10:45-11:15	Coffee break					
11:15-12:05		Product operators II (S. Glaser)	Relaxation I (Introduction) (N.Lakomek)	Introduction to Solid-state NMR (H. Heise)	Parallel Sessions (see page 3)	Parallel Sessions (see page 3)
12:10-13:00		Product operators III (S. Glaser)	Relaxation II (Theory) (N. Rezaei-Ghaleh)	Introduction to Solid-state NMR (H. Heise)		
13:00-14:00	Lunch break					
14:00-14:50		Exercise Product operators (S. Glaser)	Relaxation III (P. Neudecker)	Exercise Phase Cycling / Gradients (P. Schmieder)		
14:55-15:45		2D NMR (N. Lakomek)	Exercise Anisotropic Interactions (B. Reif)	Exercise Solid-state NMR (H. Heise)		
15:45-16:15	Coffee break					
16:15-17:05		Exercise Product operators + 2D NMR (S. Glaser / N.Lakomek)	Exercise Relaxation (NL, NRG)	Pulse sequences (C. Richter)		
17:10-18:00		Exercise 2D NMR (N. Lakomek)	NMR Magnets (P. Wikus)	Pulse sequences (C. Richter)		16:45-17:00 Closing
18:00-19:00		Brezel & Beer			19:00 Brezel&Beer	

Parallel Sessions

		Thursday	Thursday	Thursday	Friday	Friday	
		3D	3C	3B	3D	3C	3B
		Small molecules	Solution NMR	Solid-state NMR	Biomolecular NMR	Hyperpolarization	Material Sciences
	Coffee break						
11:15-12:05		J. Liermann	M. Zweckstetter	E. Brunner	H. Jonker	B. Corzilius	J. Granwehr
12:10-13:00		T. Hackl	D. Friedrich	D. Huster	F. Hagn	G. Mathies	T. Gutmann
	Lunch break						
14:00-14:50		B. Luy	J. Balbach	C. Glaubitz	L. Andreas	S. Glögger	J. Schmedt auf der Günne
14:55-15:45		C. Fares	A. Schlundt	T. Ferreira	V. Dötsch	S. Mamone	T. Wiegand
	Coffee break				No coffee Break	No coffee break	No coffee Break
16:15-17:05		H. Sun	M. Kovermann	K. Saalwächter	15:55-16:45 A. Schütz	15:55-16:45 M. Enders	15:55-16:45 A. Smith
17:10-18:00		R. Valiullin	R. Linser	A. Krushelnitsky	16:45-17:00 Closing	16:45-17:00 Closing	16:45-17:00 Closing
18:10-19:00		A. Viegas	M. Etzkorn				
19:00-21:00		Brezel & Beer	Brezel & Beer	Brezel & Beer			

Monday 06.03.23

9:00-9:10	Dieter Willbold: Opening and introduction to the Jülich/Düsseldorf Bio-NMR site
9:10-9:50	Dieter Willbold: Structural biology as a basis for drug development with IDPs as targets
9:55-10:45	Steffen Glaser: Product operators I
10:45-11:15	Coffee break
11:15-12:05	Steffen Glaser: Product operators II
12:10-13:00	Steffen Glaser: Product operators III
13:00-14:00	Lunch break
14:00-14:50	Steffen Glaser: Exercise Product operators
14:55-15:45	Nils-Alexander Lakomek: Two-dimensional NMR spectroscopy
15:45-16:15	Coffee break
16:15-17:05	S. Glaser / N. Lakomek: Exercise Product operators + 2D NMR
17:10-18:00	Nils-Alexander Lakomek: Exercise Two-dimensional NMR spectroscopy
18:00-20:00	Welcome: Brezel & Beer

Tuesday 07.03.

9:00-10:45	Bernd Reif: Anisotropic interactions
10:45-11:15	Coffee break
11:15-12:05	Nils-Alexander Lakomek: Relaxation I: Introduction and pulse sequences
12:10-13:15	Nasrollah Rezaei-Ghaleh: Relaxation II: Theory
13:15-14:15	Lunch break
14:15-15:05	Philipp Neudecker: Relaxation III: NMR relaxation dispersion
15:10-15:45	Bernd Reif: Exercise Anisotropic interactions
15:45-16:15	Coffee break
16:15-17:05	N. Lakomek, N. Rezaei-Ghaleh, P. Neudecker: Exercise Relaxation
17:10-18:00	Patrick Wikus: NMR Magnets

Wednesday 08.03.

9:00-10:45	Peter Schmieder: Phase Cycling / Gradients / Quadrature Detection
10:45-11:15	Coffee break
11:15-13:00	Henrike Heise: Introduction to Solid-state NMR
13:00-14:00	Lunch break
14:00-14:50	Peter Schmieder: Exercise Phase Cycling / Gradients / Quadrature Detection
14:55-15:45	Henrike Heise: Exercise Introduction to Solid-state NMR
15:45-16:15	Coffee break
16:15-18:00	Christian Richter: NMR pulse sequences

Thursday 09.03.

Plenary session

Chair: Manuel Etzkorn

9:00-9:50 Michael Sattler: Design, principles and building blocks of heteronuclear NMR pulse sequences

9:55-10:45 Hartmut Oschkinat: Introduction to solid-state NMR on proteins

10:45-11:15 Coffee break

Parallel sessions

Small Molecules NMR (Lecture hall 3D)

Chair: Matthias Stoldt

11:15-12:05 Johannes Liermann: NMR experiments for small molecules

12:10-13:00 Thomas Hackl: Metabolomics - The analysis of complex mixtures on the example of foodstuffs

13:00-14:00 Lunch break

Chair: Nasrollah Rezaei-Ghaleh

14:00-14:50 Burkhardt Luy: NMR pulse design

14:55-15:45 Christophe Fares: NMR in Catalysis

15:45-16:15 Coffee break

Chair: Nasrollah Rezaei-Ghaleh

16:15-17:05 Han Sun: Structural elucidation of bioactive compounds using anisotropic NMR spectroscopy

17:10-18:00 Rustem Valiullin: Diffusion NMR - from basics to potential applications

18:00-19:00 Aldino Viegas: Protein-Ligand Interactions by Saturation Transfer Difference NMR

Solution-state NMR (Lecture hall 3C)

Chair: *Andrew Dingley*

11:15-12:05 Markus Zweckstetter: Residual dipolar couplings

12:10-13:00 Daniel Friedrich: How to assign NMR resonances of proteins

13:00-14:00 Lunch break

Chair: *Matthias Stoldt*

14:00-14:50 Jochen Balbach: NMR in protein unfolding/misfolding and posttranslational modifications

14:55-15:45 Andreas Schlundt: Solution-NMR applied to RNAs: A short overview of options, approaches and requirements

15:45-16:15 Coffee break

Chair: *Wolfgang Hoyer*

16:15-17:05 Michael Kovermann: Fluorine and NMR - a perfect match to study molecular crowding

17:10-18:00 Rasmus Linser: Non-uniform sampling and higher-dimensionality (>3D) NMR approaches

18:00-19:00 Manuel Etzkorn: Selective-interleaved-parallel-targeted or "The Art of Optimized Polarization Usage"

Solid-state NMR (Lecture hall 3B)

Chair: *Henrike Heise*

11:15-12:05 Eike Brunner: Spin-Exchange Optical Pumping of Noble Gases and its Applications

12:10-13:00 Daniel Huster: Static NMR methods to study the interaction between membrane lipids and membrane proteins - simple but effective

13:00-14:00 Lunch break

Chair:

Henrike Heise

14:00-14:50

Clemens Glaubitz: (DNP-enhanced) solid-state NMR as a tool for mechanistic studies on membrane proteins

14:55-15:45

Tiago Mendes Ferreira: Dipolar recoupling for characterization of anisotropic motion

15:45-16:15

Coffee break

Chair:

Nils-Alexander Lakomek

16:15-17:05

Kay Saalwächter: Molecular dynamics in soft materials – Understanding T2

17:10-18:00

Alexey Krushelnitsky: T1rho in solids under MAS: Problems and solutions

Friday 10.03.

Plenary session

<i>Chair</i>	<i>Nils-Alexander Lakomek</i>
9:00-9:50	Christian Griesinger: Cross Correlated Relaxation, TROSY and more
9:55-10:45	Gunnar Schröder: Integrative structural biology by NMR and Cryo-EM
10:45-11:15	Coffee break

Parallel sessions

Biomolecular NMR (Lecture hall 3D)

<i>Chair:</i>	<i>Manuel Etzkorn</i>
11:15-12:05	Henry Jonker: NMR restraints and structure calculation
12:10-13:00	Franz Hagn: Pushing the limits of membrane protein NMR with advanced lipid nanodiscs
13:00-14:00	Lunch break
<i>Chair:</i>	<i>Manuel Etzkorn</i>
14:00-14:50	Loren Andreas: Proton-detected solid-state NMR at fast MAS frequencies and high magnetic fields
14:55-15:45	Volker Dötsch: Combination of cell-free expression and NMR spectroscopy for the investigation of membrane proteins
15:45-15:55	Small Break
15:55-16:45	Anne Schütz: Capturing transient and real-time biomolecular processes by NMR

Hyperpolarization NMR (Lecture hall 3C)

<i>Chair:</i>	<i>Nasrollah Rezaei-Ghaleh</i>
11:15-12:05	Björn Corzilius: MAS DNP - transfer mechanisms and methods
12:10-13:00	Guinevere Mathies: Pulse(d) dynamic nuclear polarization
13:00-14:00	Lunch break

Chair: *Nasrollah Rezaei-Ghaleh*

14:00-14:50 Stefan Glöggler: Para-Hydrogen Enhanced Magnetic Resonance

14:55-15:45 Salvatore Mamone: Singlet state NMR

15:45-15:55 Small Break

15:55-16:45 Markus Enders: Solution NMR of Paramagnetic Molecules

NMR in Material Sciences (Lecture hall 3B)

Chair: *Henrike Heise*

11:15-12:05 Josef Granwehr: In situ NMR

12:10-13:00 Thorsten Gutmann: Introduction to Quadrupolar Interactions in Solid State NMR

13:00-14:00 Lunch break

Chair: *Henrike Heise*

14:00-14:50 Jörn Schmedt auf der Günne: Symmetry Based Pulse Sequences in Solid-State NMR

14:55-15:45 Thomas Wiegand: Molecular recognition events studied by solid-state NMR: From noncovalent interactions to phase separation

15:45-15:55 Small Break

15:55-16:45 Albert Smith: Measuring slow timescale dynamics in solid-state NMR