

5. - 8. OCTOBER 2026



Training course

on Hyperpolarized ^{13}C & ^{129}Xe MRI:

moving to clinical use



The MR Research Centre
Palle Juul-Jensens
Boulevard 99
8200 Aarhus N
Denmark



Hotel Guest Apart
Tueager 5
8200 Aarhus N
Denmark

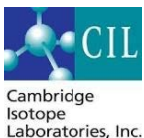


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Program

Monday 5. October

Venue Hotel GUESTapart – registration 8.30-8.55

09:00-09:25	Welcome, practical details, speaker intro
09:25-09:45	Introductory round (1-2 min from each participant)
09:45-10:30	Introduction to MR, general overview (SR)
10:30-11:00	coffee break
11:00-11:45	Introduction to d-DNP (AC)
11:45-12:30	Introduction to SEOP (GN)
12:30-13:30	lunch
13:30-14:15	Introduction to PHIP (MC)
14:15-15:00	Running a hyperpolarised MR exam: MRSI, physics, constraints, prescan (RFS)
15:00-15:30	coffee break
15:30-16:15	Beyond thermal SNR: efficient use of hyperpolarized magnetization (JHA)
16:15-17:00	Postprocessing techniques: fitting, metabolic modelling, denoising (JWG)
17:00-18:00	Meet the Experts session
18:00-20:00	Dinner at hotel GUESTapart

Tuesday 6. October

We walk from hotel to hospital 8.50 → the MR Research Centre

09:00-10:15	Hyperpolarisation rotations, Large animal experiments, Matlab, data analysis
10:15-10:30	coffee break
10:30-11:45	Hyperpolarisation rotations, Large animal experiments, Matlab, data analysis
11:45-12:30	lunch
12:30-15:00	Hyperpolarisation rotations, Large animal experiments, Matlab, data analysis
15:00-15:30	coffee break - Auditorium J116-113, Entrance J, J110
15:30-16:15	Imaging considerations for ^{129}Xe MRI (JMW)
16:15-17:00	MNS Hardware and Coils (JMW)
17:00-18:00	Free time and transportation
18:00-20:00	Dinner in Aarhus Street Food and social event at Wine & Petanque

Wednesday 7. October

We walk from hotel to hospital 8.50 → the MR Research Centre

09:00-10:15	Hyperpolarisation rotations, Large animal experiments, Matlab, data analysis
10:15-10:30	coffee break
10:30-11:45	Hyperpolarisation rotations, Large animal experiments, Matlab, data analysis
11:45-12:30	lunch
12:30-15:00	Hyperpolarisation rotations, Large animal experiments, Matlab, data analysis
15:00-15:30	coffee break at Hotel GuestApart
15:30-16:15	Considerations for Human experiments (FG)
16:15-17:00	Panel discussion: moving hyperpolarized ^{13}C and ^{129}Xe MRI toward clinical use (FG/JMW)
17:00-18:00	Free time
18:00-20:00	Conference dinner at hotel GUESTapart – Restaurant Hærværk

Thursday 8. October

Venue Hotel GUESTapart

09:00-09:25	High throughput dDNP without cross polarization (ACap)
09:25-09:45	Quality control and reproducibility in clinical hyperpolarized MR (CL)
09:45-10:30	Artefacts in hyperpolarized MRI/MRS (RFS)
10:30-11:00	coffee break
11:00-11:45	Imaging strategies: sequences and trajectories (JWG)
11:45-12:30	From method to answer: designing a robust hyperpolarized MR experiment (LBB)
12:30-13:30	lunch
13:30-14:15	Course evaluation and farewell

Christoffer Laustsen	CL	Aarhus
Rolf Schulte	RFS	GE
Steffen Ringgaard	SR	Aarhus
Arnaud Comment	AC	GE
Graham Norquay	GN	Sheffield
Jim Wild	JMW	Sheffield
Myriam Chaumail	MC	NVision
Jeremy Gordon	JWG	UCSF
Ferdia Gallagher	FG	University of Cambridge
Andrea Capozzi	Acap	Polarize/EPFL
Lotte Bonde Bertelsen	LBB	Aarhus
Jan Henrik Ardenkjær-Larsen	JHA	Aarhus

Organizing committee

Lotte Bonde Bertelsen
Lone Hanberg Sørensen
Christoffer Laustsen
Steffen Ringgaard
Rolf Schulte

Stations for Tuesday and Wednesday

HYPERPOLARIZATION WORKSHOP 2026 - FULL GROUP SCHEDULE

DAY 1

Time	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
09:00 - 10:15	SEOP	Pig experiments	Spinaligner	Matlab	NVision	Transportable
10:15 - 10:30	BREAK					
10:30 - 11:45	Pig experiments	Spinaligner	Cell experiments	NVision	Transportable	Spinlab
11:45 - 12:30	LUNCH					
12:30 - 13:45	Spinaligner	Cell experiments	Matlab	Transportable	Spinlab	SEOP
13:45 - 15:00	Cell experiments	Matlab	NVision	Spinlab	SEOP	Pig experiments

DAY 2

Time	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6
09:00 - 10:15	Matlab	NVision	Transportable	SEOP	Pig experiments	Spinaligner
10:15 - 10:30	BREAK					
10:30 - 11:45	NVision	Transportable	Spinlab	Pig experiments	Spinaligner	Cell experiments
11:45 - 12:30	LUNCH					
12:30 - 13:45	Transportable	Spinlab	SEOP	Spinaligner	Cell experiments	Matlab
13:45 - 15:00	Spinlab	SEOP	Pig experiments	Cell experiments	Matlab	NVision

Matlab exercises during the training sessions

The exercises consist of hyperpolarized ^{13}C and ^{129}Xe MRI analyses and data processing. You will only be able to complete some of the exercises during the time appointed for the training course. The recommendation is to choose the topic most relevant to you and later complete the remaining. The four topics are listed below:

1. Carbon 13: Polarization test and CSI data reconstruction (RFS)
2. Carbon 13: Kinetic modelling and quantification of metabolism (JG)
3. Xenon 129: Time-domain Voigt fitting of dissolved-phase in the lungs (GN)
4. Xenon 129: Flip angle calibration and k-space correction (JW)

Prerequisite

The exercises are written in or with solutions in Matlab, which you must install in advance.

Data and exercise material

Please download the exercise material before attending the course.

This can be done via the following [FileSender](https://filesender.deic.dk/?s=download&token=a7946cee-544c-424c-b381-855f8e4e7383) link (expires on 12. October 2026)

<https://filesender.deic.dk/?s=download&token=a7946cee-544c-424c-b381-855f8e4e7383>

Faculty/Speakers

Christoffer Laustsen

Graduated in physics and Nano Science from Aarhus University and received his PhD in medical research from the same university. Professor and head of MR Research at the MR-Research Center, Department of Clinical Medicine, Aarhus University, Denmark.

His main research focus has been on introducing the novel imaging methodology Dynamic Nuclear Polarization for early identification and monitoring of the diabetic disease nephropathy.



Ferdia Gallagher

Professor Ferdia Gallagher is a Cancer Research UK Senior Research Fellow, Head of the Department of Radiology at the University of Cambridge, and an honorary Consultant Radiologist at Addenbrooke's Hospital in Cambridge.

He leads the Clinical Molecular Imaging Group in the Department of Radiology and the preclinical imaging group in the Anne McLaren Building on the Cambridge Biomedical Campus. He has expertise in metabolic imaging using MRI and PET for stratification of tumours and response to therapy.

The group has a particular interest in understanding the molecular basis of metabolism in a range of cancers, and how novel non-invasive imaging methods to probe this metabolism can be translated into patient studies. The ultimate goal of his work is to develop new imaging biomarkers of early detection and treatment response for patient benefit.



Jeremy W. Gordon

Received his PhD from the University of Wisconsin-Madison in Medical Physics. He is currently an Associate Professor at the University of California, San Francisco (UCSF).

His research program focuses on the development, optimization, and translation of MRI-based molecular imaging methods to assess metabolism in preclinical models and human subjects, with particular expertise in hyperpolarized ^{13}C MRI



Jim Wild

Received his PhD in MR spectroscopy from the University of Edinburgh. Professor at the University of Sheffield and head of POLARIS (Pulmonary, Lung and Respiratory Imaging Sheffield).

His research focuses on physics and engineering, and clinical applications of hyperpolarized gas (^3He and ^{129}Xe) and proton MRI in the lungs and pulmonary vasculature.



Andrea Capozzi

Andrea Capozzi graduated in Physics from the University of Pavia and received his PhD in Physics from EPFL, Lausanne. He subsequently held academic positions at the Technical University of Denmark (DTU) and EPFL, where he served as an Assistant Professor and independent junior group leader, respectively.

He is currently Research and Applications Manager at Polarize ApS, where he leads research and application development activities related to dissolution Dynamic Nuclear Polarization (dDNP), including the development and implementation of new hyperpolarization methodologies and their translation into biomedical and preclinical applications.

His research focuses on the fundamental understanding of dDNP, the development of hyperpolarization technologies, and their application to magnetic resonance spectroscopy and imaging.



Arnaud Comment

PhD in Physics at University of Illinois, Champaign-Urbana, and EPFL. Currently manager of the Hyperpolarized ^{13}C Imaging program at GE HealthCare.

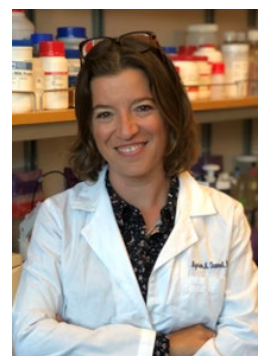
His expertise is in instrumentation and methods for preclinical and clinical hyperpolarized ^{13}C MR.



Myriam Chaumeil

Myriam Chaumeil is the Head of Research, HP MRI applied science, at NVision Imaging Technologies, as well as Adjunct Full Professor at the University of California San Francisco, and Honorary Full Professor at Ulm University.

She received her PhD in Physics from the University of Paris-Sud. Her expertise is on developing and validating Hyperpolarized ^{13}C -MR based methods for in vivo measurement of brain metabolism, in physiological and pathological conditions, in preclinical models and in patients.



She has experience in studies of glioblastoma, Huntington's disease, Multiple Sclerosis, Alzheimer's disease, Traumatic Brain Injury, cerebral small vascular diseases and CNS lymphoma.

Graham Norquay

Graduated in physics from the University of Glasgow and received his PhD in MR physics from the University of Sheffield. Currently Lecturer in Magnetic Resonance Physics at the University of Sheffield. Leads a lab within the POLARIS (Pulmonary, Lung and Respiratory Imaging Sheffield) group dedicated to the hyperpolarisation of xenon gas for ongoing research and clinical applications with ^{129}Xe MRI.

His research interests span fundamental developments in nuclear spin polarisation physics to exploring new biomedical applications of hyperpolarised ^{129}Xe NMR.



Lotte B. Bertelsen

Graduated from Aarhus University in Molecular biology and received her PhD degree in medical research from the same university. She is an assistant professor at the MR Research Centre, Aarhus University.

Her main focus and interests are the development of methods for the study of metabolism in cells and tissue specimens using hyperpolarized MR and biochemical methods.



Rolf Schulte

Received his PhD in the development of methods for MR spectroscopy from ETH, Zürich. He is currently employed with GE as one of the lead developers of multinuclear MR methods.

His work focuses on the development of sequences and reconstruction methods for multi nuclear MR and, in particular, for hyperpolarized MR.

He is the developer of the Fidall package for doing multi-nuclear spectroscopy and, imaging and reconstruction on GE systems.



Steffen Ringgaard

Graduated in physics from Aarhus University and received his PhD in medical research from the same university. He is currently employed as an associate professor at the MR Research Centre, Aarhus University.

His main interests focus on the development of magnetic resonance methods and analysis tools.



Jan Henrik Ardenkjær-Larsen

Graduated as an engineer from the Technical University of Denmark where he also received his PhD before being employed for many years as a principal scientist at GE Healthcare.

Currently he is Professor at The MR Research Centre, Aarhus University.

His research has evolved around means to improve the sensitivity of Magnetic Resonance (MR) Imaging and Spectroscopy, to obtain new, and otherwise inaccessible, information about function and disease at the cellular and molecular levels.

He is the main inventor of hyperpolarized metabolic MR and dissolution Dynamic Nuclear Polarization, and he has received a number of scientific rewards for his research. He is also the founder of the company Polarize.



List of participants and sorting into groups

First Name	Last name	Organisation	Group
Keita	Saito	National Institutes for Quantum Science and Technology	1
Vencel	Somai	NVision Quantum Technologies	1
Rudy	Barnaud	The MR Research Centre	1
Laura	Mihaila	The MR Research Centre	1
Yoichi	Takakusagi	National Institutes for Quantum Science and Technology	2
Myriam	Chaumeil	NVision Quantum Technologies	2
Jule	Kuhn	SBMI, UKSH, Kiel University	2
Kayoko	Shoji	The MR Research Centre	2
Nobu	Oshima	Kobe Univ. Graduate School of Medicine	3
Marcel	Awenius	German Cancer Research Center (DKFZ)	3
Mohammad	Barzegar	The MR Research Centre	3
Barbara	Mathieu	University of Cambridge	3
Daichi	Kaneko	National Institutes for Quantum Science and Technology(QST) and Nippon Sanso Corporation	4
Helen	Abeln	DKFZ	4
Jeppe	Nielsen-Hannerup	The MR Research Centre	4
Lisa	Fries	NVision Quantum Technologies GmbH	4
Alexandra	Lipka	German Cancer Research Center (DKFZ)	5
Anton	Stahl	German Cancer Research Center (DKFZ)	5
Anders	Dahl Kaack	The MR Research Centre	5
Taner	Drace	The MR Research Centre	5
Bjarke	Bruun Lauritzen	The MR Research Centre	6
Pascal	Rütten	NVision Quantum Technologies	6
Viktoria	Bayer	German Cancer Research Center	6
Anna Elizabeth	Olesen	The MR Research Centre	6
Jeremy	Gordon	UCSF	6

Speakers, sponsors and others

Arnaud	Comment	GE HealthCare
Christoffer	Laustsen	The MR Research Centre
Ferdia	Gallagher	University of Cambridge
Graham	Norquay	University of Sheffield
Jan Henrik	Ardenkjær-Larsen	The MR Research Centre
Jean-Noël	Hyacinthe	EPFL
Jeremy	Gordon	University of California, San Francisco
Jim	Wild	University of Sheffield
Jóan Hofgaard	Køtlum	Polarize
Lotte	Bonde Berselsen	The MR Research Centre
Matthias	Schulze	Merck
Myriam	Chaumeil	NVision Quantum Technologies
Pascal	Rütten	NVision Quantum Technologies
Poul Erik	Holm	GE HealthCare Danmark A/S
Rolf	Schulte	GE HealthCare
Sotirios	Katsikis	EPFL
Steffen	Ringgaard	The MR Research Centre
Vencel	Somai	NVision Quantum Technologies
Ali	Khan	The MR Research Centre
Duy	Anh Dang	The MR Research Centre
Esben	SS Hansen	The MR Research Centre
Lone	Hanberg	The MR Research Centre
Maria	Ditlev	The MR Research Centre
Mette	Birk	The MR Research Centre
Michael	Væggemose	The MR Research Centre
Nichlas	Vous Christensen	The MR Research Centre
Tau	Vendelboe	The MR Research Centre

Travel

Getting to Aarhus by air

Traveling to/from Aarhus Airport

The Aarhus Airport Tirstrup is located 40 km north of the city. It offers international flights to European destinations, such as Oslo, Stockholm, Gothenburg, Manchester, London (Stansted and Gatwick), Berlin, Munich, Nice, Rome, and Cyprus. Please visit their website for information on flight arrival/departure times.

There is an airport shuttle bus from Aarhus Airport with frequent departures (every 20 minutes after each flight arrival with departures from just outside the main entrance). The fare is about DKK 100, and it takes about 50 minutes to reach downtown Aarhus. The bus stops at the Aarhus University campus (at Nobelparken). Click the link below for more airport bus information or call (+45) 8612 8622.

Bus fares can be paid in cash (DKK, NOK, SEK, USD, GBP, EUR). Credit cards are also accepted on the Airport bus: Dankort, VISA, MasterCard, or JCB.

There are direct flights between Aarhus Airport/Tirstrup and Copenhagen International Airport, with many daily departures on weekdays and some on Saturdays and Sundays. The flight takes 35 minutes. A free transit bus in Copenhagen links the International and Domestic airport terminals.

[Aarhus airport Tirstrup](#)

[Airport bus information](#)

[Copenhagen International Airport](#)

Travelling to/from Billund airport

Billund airport is located 100 km south of Aarhus. It has direct international flight connections to many European destinations, including Barcelona (Girona), Berlin, Birmingham, Brussels, Edinburgh, Faro, Frankfurt, London, Manchester, Milan, Munich, Oslo, Paris, Riga, Rome, and Stavanger. Please visit the airport website for more information on arrivals and departures.

An airport shuttle bus between Aarhus and Billund Airport departs several days a day. Please click the airport link below to find more information. The travel time from Billund Airport to downtown Aarhus is approximately 1 hour and 30 minutes. Tickets are sold on the bus for about 140 DKK. Credit cards are also accepted on the Airport bus: Dankort, VISA, MasterCard, Visa Electron, V Pay, China Union Pay, American Express, or JCB.

[Billund airport](#)

Travelling to/from Copenhagen airport

Please visit the website for more information on arrivals and departures by plane. To connect trains to Aarhus, please click the DSB link below. Copenhagen Airport is connected to Aarhus Airport/Tirstrup, with many daily departures on weekdays and some on Saturdays and Sundays. The flight takes 35 minutes. A free transit bus in Copenhagen links the International and Domestic airport terminals. Copenhagen Airport has direct flight connections to many international destinations.

[Copenhagen Airport](#)

[DSB](#)

[Aarhus Airport Tirstrup](#)

Getting to Aarhus by train

Aarhus lies at one of the most important railway junctions in Denmark. There are hourly departures to the north, south, and west. From Southern and Central Europe, the connections are via Hamburg/Flensburg. Travel time from Hamburg to Aarhus is approximately five hours. From Eastern European countries, train connections to Aarhus are via Poland and Copenhagen. Aarhus has hourly services to and from Copenhagen. The opening of the Tunnel under the Great Belt has shortened the journey by one hour, so now the trip takes three and a half hours. There are several daily connections to Sweden, Germany, and the rest of Europe.

Please visit [DSB](#) or [DSB Journey planner](#) to find all your connection route options.

Trains bound for Aarhus railway station leave Copenhagen Airport hourly. The price is about DKK 410 for a one-way ticket (including seat reservation). To buy a ticket at the Copenhagen airport, you should go to the DSB Ticket Sales booth in Terminal 3, just above a rolling sidewalk that takes you down to the train.

Getting to Aarhus by ferry

Check the [Molslinjen website](#) for current timetables for ferries to Zealand (Aarhus-Odden).

Getting to Aarhus by car

Aarhus has direct connections to the great European network of motorways, making it easy to get to most European cities. Hamburg can be reached within roughly four hours. There are also excellent roads to most places in Denmark. For more information, please check the location on the map [MR Research Centre](#), [Hotel GUESTapart](#)

Getting to Aarhus by taxi

Individual taxi services are available - approx. DKK 600 from Aarhus Airport to Aarhus and DKK 1500 from Billund Airport to Aarhus.

Getting around in Aarhus

City busses and City light rail (Letbanen)

Midt Trafik, the municipal bus company, runs the yellow buses and the City light rail. The bus route number is indicated at the front and back of the bus, and the destination is displayed above the rear door.

The light rail directly connects Aarhus railway station and Aarhus University Hospital, just next to Hotel GUESTapart.

All tickets must be bought in advance. [Find more information here](#)

Remember to buy your ticket before entering Letbanen because you cannot purchase tickets on the bus/train.

