

# Program

## Tuesday, 03 August 2021

17:00 – 20:00 Registration

18:00 *BUFFET SUPPER and get-together*

## Wednesday, 04 August 2021

08:00 *BREAKFAST*

08:45 – 09:00 Scientific organizers **Welcome words**

Stefan Jorda **About the WE-Heraeus-Foundation**

09:00 – 09:45 Jörg Wrachtrup **Narrow photons and coherent spins in semiconducting materials**

09:45 – 10:30 Hans Beukers **Realization of a multi-node quantum network of remote solid-state qubits**

10:30 – 11:00 *COFFEE BREAK*

11:00 – 11:30 Hans Bartling **Entanglement of spin-pair qubits with intrinsic dephasing times exceeding a minute**

11:30 – 12:00 Milos Nesladek **Readout of  $^{14}\text{N}$  nuclear spin using NV electron spin by photoelectric detection**

12:00 – 12:30 Francesco Poggiali **Single-shot readout of NV centers in diamond via cryogenic spin-to-charge conversion**

12:30 – 12:40 **Conference Photo** (*in the front of the lecture hall*)

12:40 *LUNCH*

# Program

Wednesday, 04 August 2021

13:45 – 14:30	Matt Sellars	Linear optics quantum computing with erbium doped crystals: concepts, developments and potential applications
14:30 – 15:15	Klaus Mølmer	Challenges and opportunities with optical networks
15:15 – 15:45	Nadezhda Kukharchyk	Decoherence processes in rare-earth spin ensembles at millikelvin temperatures
15:45 – 16:15	<b>Poster I online</b>	
16:15 – 16:45	<i>COFFEE BREAK</i>	
16:45 – 17:15	<b>Poster I online</b>	
17:15 – 18:00	Andrei Faraon	Towards optical quantum networks with rare earth ions
18:00 – 18:45	Jeff Thompson	Towards quantum networks with individual rare earth ions in nanophotonic structures
19:00	<i>DINNER</i>	
20:00 – 21:00	<b>Poster on site</b>	

# Program

Thursday, 05 August 2021

08:00	<i>BREAKFAST</i>	
09:00 – 09:45	Mikael Afzelius	<b>Optical spin-wave quantum memories based on rare-earth spins in crystals</b>
09:45 – 10:30	Roman Kolesov	<b>Scalable architecture of photonic circuits for fast control of Purcell enhanced quantum emitters</b>
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 11:30	Chetan Deshmukh	<b>Towards detection of single erbium ions in a tunable fiber micro-cavity</b>
11:30 – 12:00	Andreas Reiserer	<b>Erbium dopants – a novel platform for quantum networks</b>
12:00 – 12:30	Mehmet Tuna Uysal	<b>Coherent control of a single nuclear spin with an Er<sup>3+</sup> ion</b>
12:30	<i>LUNCH</i>	

# Program

Thursday, 05 August 2021

13:45 – 14:30	Mikhail Lukin	<b>Towards quantum networking with diamond nanophotonic systems</b>
14:30 – 15:15	Nathalie de Leon	<b>Engineering new solid state quantum defects for quantum networks</b>
15:15 – 15:45	Diana Serrano	<b>Rare-earth molecular crystals with ultra-narrow optical linewidth for photonic quantum technologies</b>
15:45 – 16:15	<i>COFFEE BREAK</i>	
16:15 – 16:45	Zong-Quan Zhou	<b>Quantum repeater and transportable quantum memory based rare-earth ions in solids</b>
16:45 – 17:15	Jelena Rakonjac	<b>Entanglement between a telecom photon and a spin-wave solid-state multimode quantum memory</b>
17:15 – 18:00	Margherita Mazzera	<b>Laser written platforms for integrated solid-state quantum memories for light</b>
18:00 – 18:45	Christoph Simon	<b>Photons and spins from quantum networks to quantum neuroscience</b>
19:00	<i>DINNER</i>	
20:00 – 21:00	<b>Poster II online</b>	

# Program

Friday, 06 August 2021

08:00	<i>BREAKFAST</i>	
09:00 – 09:45	Tracy Northup	<b>Tutorial on trapped ions</b>
09:45 – 10:30	David Lucas	<b>Optical networking of trapped-ion spin qubits for quantum computing, communication and clocks</b>
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 11:30	Gabriel Araneda	<b>A two-node trapped-ion quantum network with photonics interconnects</b>
11:30 – 12:00	Vadim Vorobyov	<b>Programmable quantum register based on NV center in diamond and nuclear spins</b>
12:00 – 12:30	Andreas Walter	<b>Roadmap for rare-earth quantum computing</b>
12:30	<i>LUNCH</i>	

# Program

**Friday, 06 August 2021**

13:45 – 14:30	Claire Le Gall	<b>Nuclear spins in quantum dots: Turning a noise source into a resource</b>
14:30 – 15:15	Charles Babin	<b>Nanofabricated and integrated colour centres in SiC with high- coherence spin-optical properties</b>
15:15 – 15:45	Georgy Astakhov	<b>Inverted excited-state structure of a SiC qubit enabling spin-photon interface</b>
15:45 – 16:15	<i>COFFEE BREAK</i>	
16:15 – 16:45	Julian Bopp	<b>Design of novel waveguide-coupled diamond nanostructures for efficient photonic integration</b>
16:45 – 17:15	Matteo Pasini	<b>Towards an efficient spin-photon interface based on tin-vacancy centres in diamond</b>
17:15 – 18:00	Guido Burkard	<b>Nuclear spin quantum memories in Silicon and SiC</b>
18:00 – 18:45	David Awschalom	<b>Scaling quantum systems with silicon carbide and molecules</b>
19:00	<i>HERAEUS DINNER (social event with cold &amp; warm buffet with complimentary drinks)</i>	

# Program

**Saturday, 07 August 2021**

08:00	<i>BREAKFAST</i>	
09:00 – 09:45	Markus Hennrich	<b>Sub-microsecond trapped ion quantum gates via Rydberg interaction</b>
09:45 – 10:30	Tim Taminiau	<b>Quantum processors based on spins in diamond</b>
10:30 – 11:00	<i>COFFEE BREAK</i>	
11:00 – 11:45	Wolfgang Wernsdorfer	<b>Operating quantum states in individual magnetic molecules</b>
11:45– 12:30	Scientific organizers	<b>Panel discussion Poster prizes, conclusion</b>
12:30	<i>LUNCH</i>	

**End of the seminar and departure**

**REI Workshop** (see separate schedule)