



**Workshop on  
Lidar Applications in Atmospheric Remote Sensing**

**27 - 28 April 2021**



**Program:**

Day 1, 27 April		
Time	Subject	Lecturer
11:30 – 13:00	1- A short introduction to the Earth atmosphere (atmospheric layers, atmospheric composition, spectroscopic atmospheric windows, atmospheric loops, wind and jet streams), 2- An introduction to remote sensing (passive / active remote sensing, basics and instruments, ground base, air borne and space borne remote sensing).	Hamid Khalesifard
13:00 – 14:00	Break	
14:00 – 15:30	3- Introduction to Lidar (Lidar as a range finder, backscatter and extinction coefficients, Lidar ratio, Lidar equation, depolarization in Lidar signals, basics of Raman Lidar).	Hamid Khalesifard
15:30 – 15:45	Break	
15:45 – 17:15	4. Introduction to experimental methods in cloud and aerosol research (CAR) with lidar, I, Raman lidar: a. Conventional Raman lidar, b. Spectrometric Raman lidar.	Jens Reichardt
17:15 – 17:30	Break	
17:30 – 19:00	5- Introduction to experimental methods in cloud and aerosol research (CAR) with Lidar, II, Fluorescence Lidar: a. Conventional fluorescence lidar, b. Spectrometric fluorescence lidar. RAMSES – depolarization spectrometric Raman and fluorescence lidar: c. Lindenberg site and history, d. Instrument.	Jens Reichardt



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Day 2, 28 April		
Time	Subject	Lecturer
11:30 – 13:00	6- Excursus: a. Water vapor measurement: Raman method vs. alternative techniques, b. Temperature measurements: Rotational Raman method vs. other techniques.	Jens Reichardt
13:00 – 14:00	Break	
14:00 – 15:30	7- Introduction to microphysical evaluation methods of measurements with Raman Lidars, I, Aerosols: a. Optical particle models, b. Examples of aerosol retrievals.	Jens Reichardt
15:30 – 15:45	Break	
15:45 – 17:15	8- Introduction to microphysical evaluation methods of measurements with Raman Lidars, II, Clouds: a. Cloud retrievals based on the multiple-scattering effect, b. Cloud retrievals based on measurements of cloud water content.	Jens Reichardt
17:15 – 17:30	Break	
17:30 – 19:00	9- Advanced cloud and aerosol studies.	Jens Reichardt