

Radio Observations of Theory of Atmospheric Discharge Processes

University of Bath, 26-30 June 2023

Meeting Room 4E3.10 in the Department of Electrical and Electronic Engineering at the University of Bath

Monday, June 26th

- 09:00-09:20 Coffee and Tea
- 09:20-09:30 **Welcome and Introduction**
- 09:30-10:00 **Nikolai Østgaard - Airborne Lightning Observatory for FEGS and TGFs Campaign (ALOFT)**
- 10:00-10:30 **Andrey Mezentsev - Discerning TGF and accompanying leader current pulse**
- 10:30-11:00 Refreshments
- 11:00-11:30 **Michael Briggs - TGF observations with Fermi GBM: review and planned improvements**
- 11:30-12:00 **Sebastien Celestin - XStorm: a lightweight balloon-borne gamma ray spectrometer to detect gamma ray glows and TGFs in close proximity**
- 12:00-12:15 **Ondrej Santolik - Radio instrument package RIP for the STRATELEC balloon**
- 12:15-14:00 Lunch
- 14:00-14:45 **Victor Pasko - Conditions for inception of positive corona and relativistic runaway discharges in air**
- 14:45-15:15 **Pierre Gourbin - Self-consistent effects of relativistic runaway electron avalanches**
- 15:15-15:45 Tea and Coffee
- 15:45-16:15 **Gabriel Sousa-Diniz - RREA development near threshold in inhomogeneous air**
- 16:15-16:45 **Reza Janalizadeh - Efficient modeling of electron kinetics under influence of externally applied electric field in weakly ionized magnetized plasma**
- 16:45-18:00 Discussions

Tuesday, June 27th

- 09:00-09:30 Coffee and Tea
- 09:30-10:00 **Torsten Neubert - The Top of Thunderstorms Experimental Module (TOTEM) for the ISS**
- 10:00-10:30 **Alejandro Luque - Understanding BLUE events from optical and radio observations**
- 10:30-11:00 Refreshments
- 11:00-11:30 **Dongshuai Li - Different types of corona discharges nearby cloud top**
- 11:30-12:15 **Thomas Marshall - Lightning Initiation and the role of Initial Breakdown Pulses**
- 12:15-14:00 Lunch
- 14:00-14:30 **Amitabh Nag - Cloud-to-ground lightning attachment processes observed on a sub-microsecond timescale**
- 14:30-15:00 **Caitano da Silva - Polarity asymmetries in triggered lightning flashes**
- 15:00-15:30 Tea and Coffee
- 15:30-16:00 **Phillip Bitzer - Multifrequency observations of lightning flashes, from ground to space**
- 16:00-16:30 **Mike Protts - Lightning detection and more from the Met Office's LEELA lightning location system**
- 16:30-17:00 **Graeme Marlton - Lightning detection and more from the Met Office's LEELA lightning location system**
- 17:00-18:00 Discussions

Wednesday, June 28th

- 09:00-09:30 Coffee and Tea
- 09:30-10:00 **Robert Marshall - Direct and indirect effects of the lightning EMP on the mesosphere and lower ionosphere**
- 10:00-10:30 **Gaopeng Lu - Insights into red sprite phenomenology in South China based on observations of Chinese amateurs during the COVID-19 outbreak**
- 10:30-11:00 Refreshments
- 11:00-11:30 **Ivana Kolmasova - Multiple whistler echo trains associated with winter thunderstorms: characteristics of related lightning discharges and their VLF sferics**
- 11:30-12:00 **Liliana Macotela - VLF banded structured events observed in the 5–39 kHz frequency range in Finland**
- 12:00-14:00 Lunch
- 14:00-14:30 **Robert Moore - ELF/VLF Transients, TLE's, and the Schumann Resonances**
- 14:30-15:00 **Martin Fullekrug - Halo and sprite observations at the SKA South Africa**
- 15:00-17:30 Posters and Discussions with Tea and Coffee
- **Alejandro Malagón-Romero - A physics-informed neural network to accelerate Monte Carlo streamer simulations**
 - **David Sarria - Library of simulated Gamma-ray Glows and application to previous airborne observations**
 - **Francisco Javier Pérez-Invernón - Lightning-produced NO_x per flash length and flash frequency by using TROPOMI retrievals and LMA measurements**
 - **Gabriel Sousa Diniz – Citizen science ‘Thundercloud Project’ of observing thunderstorm gamma ray glows**
 - **Hemaditya Malla - Double Pulse streamers for varying interpulse times in air**
 - **Javier Navarro González - Storm-Activity time” and TGFs production**
 - **Marzieh Khansari - Solar cycle variability of the lightning activity**
 - **Zhen Wang - Quantitative modeling of streamer discharge branching in air**
 - **Zhuling Sun - Lightning interferometric mapping with Hybrid TDOA/EMTR Technique**
- 19:00-21:00 Workshop Dinner

Thursday, June 29th

- 09:00-09:30 Coffee and Tea
- 09:30-10:30 **Ute Ebert - Streamers: experiments and quantitative models**
- 10:30-11:00 Refreshments
- 11:00-11:30 **Nikolai Lehtinen - Theory of streamer propagation**
- 11:30-12:00 **Jaroslav Jansky - Time dependent model of positive corona discharge in air**
- 12:00-12:30 **Dennis Bouwman - Estimating the properties of positive air streamers from measurable parameters**
- 12:30-14:00 Lunch
- 14:00-15:00 **Brian Hare - Lightning observations with the LOFAR radio telescope**
- 15:00-15:30 Tea and Coffee
- 15:30-16:00 **Olaf Scholten - Lightning imaging with LOFAR**
- 16:00-16:30 **Joseph Dwyer - Modelling the lightning observations from LOFAR**
- 16:30-18:00 Discussions

Friday, June 30th

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| 09:00-09:30 | Coffee and Tea |
| 09:30-10:15 | Paul Krehbiel - Lightning observations at the Telescope Array in Utah and at KSC, Florida |
| 10:15-10:45 | Refreshments |
| 10:45-11:30 | XuanMin Shao - Lightning observations with BIMAP-3D |
| 11:30-12:00 | Daniel Jensen - Insights into lightning K-leader Initiation and development from BIMAP 3D observations |
| 12:00-14:00 | Lunch |
| 14:00-14:45 | Michael Stock - Lightning observations with the LWA radio telescope |
| 14:45-15:15 | Shanfeng Yuan - Lightning VHF radiation mapping method for an irregular short-baseline array |
| 15:15-15:45 | Tea and Coffee |
| 15:45-16:15 | Steve Cummer - VHF and Microwave Lightning Imaging Interferometry |
| 16:15-16:45 | Ningyu Liu - Radio Interferometer for Thunderstorm Studies (RIFTS) |
| 16:45-17:30 | Discussions |
| 17:30 | Adjourn |