Contact Information

✉ Physical Sciences Department
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Professional Preparation

Technische Universität Braunschweig ..... Brunswick, Germany
Postdoctoral Fellow – Theoretical Physics January, 2014–December, 2015
Georgia Institute of Technology ..... Atlanta, GA, USA
Postdoctoral Fellow – Earth & Atmospheric Sciences January, 2010–December, 2013
Pennsylvania State University ..... University Park, PA, USA
Ph.D., Electrical Engineering – Communication & Space Sciences Laboratory August, 2010
M.S., Electrical Engineering – Communication & Space Sciences Laboratory August, 2006
École Centrale de Lyon ..... Écully, France
Diplome d'Ingénieur (M.Eng.) de l'École Centrale de Lyon August, 2006

Appointments

Embry-Riddle Aeronautical University ..... Daytona Beach, FL, USA
Assistant Professor of Engineering Physics January, 2016–present
Technische Universität Braunschweig ..... Brunswick, Germany
Postdoctoral Fellow January, 2014–December, 2015
Georgia Institute of Technology ..... Atlanta, GA, USA
Postdoctoral Fellow January, 2010–December, 2013
Pennsylvania State University ..... University Park, PA, USA
Research Assistant January, 2005–August, 2010

Products

Relevant Publications

1. *Vernisse et al.* (2017a), Stellar winds and planetary bodies simulations: Ionosphere-rich obstacles in super-Alfvénic flow, *Planet. Space Sci.*, doi: 10.1016/j.pss.2017.01.012, in press;
2. *Vernisse et al.* (2017b), Stellar winds and planetary bodies simulations: Magnetized obstacles in super-Alfvénic and sub-Alfvénic flows, *Planet. Space Sci.*, doi: 10.1016/j.pss.2016.08.012, in press;
3. *Riousset et al.* (2014), Electrodynamics of the Martian dynamo region near magnetic cusps and loops, *Geophys. Res. Lett.*, *41*(4), 1119–1125, doi: 10.1002/2013GL059130;
4. *Riousset et al.* (2013), Three-dimensional multifluid modeling of atmospheric electrodynamics in Mars' dynamo region, *J. Geophys. Res.*, *118*(6), 3647–3659, doi: 10.1002/jgra.50328.
5. *Riousset et al.* (2010a), Air heating associated with transient luminous events, *J. Geophys. Res.*, *115*, A12,321, doi: 10.1029/2010JA015918;

Complementary Publications

1. *Boggs et al.* (2017), Thunderstorm charge structures producing gigantic jets, *Nat. Geosci.*, in review;
2. *Riousset et al.* (2010b), Modeling of thundercloud screening charges: Implications for blue and gigantic jets, *J. Geophys. Res.*, *115*, A00E10, doi: 10.1029/2009JA014286;
3. *Krehbiel et al.* (2008), Upward electrical discharges from thunderstorms, *Nat. Geosci.*, *1*(4), 233–237, doi: 10.1038/ngeo162;

4. *Riousset et al.* (2007), Three-dimensional fractal modeling of intracloud lightning discharge in a New Mexico thunderstorm and comparison with lightning mapping observations, *J. Geophys. Res.*, *112*, D15,203, doi: 10.1029/2006JD007621.

Synergistic Activities

1. **Numerical Modeling:** Author and coauthor of numerous plasma models:
   - micro- and mesoscale models of electrical discharges in air (streamer-to-leader transition, lightning and jet discharges) to simulate their electrical and chemical properties;
   - a mesoscale model of Maxwellian-relaxation of Earth's MLT region for investigations of charge dynamics in and around the thundercloud;
   - a mesoscale model called M^4 (Mars Multifluid MHD Model) for studies of the changes in the Martian dynamo region due to neutral wind and remanent crustal magnetic fields;
   - a macroscale model called A.I.K.E.F. (Adaptive Ion-Kinetic Electron-Fluid) to examine planet-induced stellar activity.
2. **Advising and Mentoring:** Continued mentoring of students at various levels:
   - 4 undergraduate students as part of NSF REU (Research Experience for Undergraduate) who worked on lightning and thundercloud physics at Penn State (Whitney Tidwell, Samuel T Poulos, Aaron S Gibson, Heather N Graffius);
   - 1 honor undergraduate student who worked on corona discharge at Penn State (who graduated with her Ph.D. from MIT (Elizabeth Kowalski);
   - 1 undergraduate student at Embry-Riddle who works on corona discharges (who received an honorable award at 2016 NSF CEDAR workshop) (Jacob A Engle);
   - 1 M.S. student at Georgia Tech who worked on Mars dynamo region and Pluto-Charon interactions (John P M Hale);
   - 1 Ph.D. student at TU Braunschweig who worked on stellar wind interactions with planetary bodies (Yoann E Vernisse);
   - 1 M.S. student at Embry-Riddle who currently works on Mars dynamo region (Morgan M Matheny).
3. **Teaching and Lectures:** Mini-course and lectures:
   - 6 lectures and supporting notes for graduate level at Georgia Tech: "From Boltzmann equation to normalized multifluid MHD and hybrid equations";
   - Physics for Engineers III for undergraduate level at Embry-Riddle (3 semesters, 6 sections, 150+ students);
   - Preparation of a course on "Introduction to Plasma Physics for Engineers" at Embry-Riddle as part of NSF CAREER proposal.
4. **Education & Outreach:**
   - Visits of lightning observatories at Camp Blanding, FL, and Langmuir Lab, NM;
   - Presentation of Mars at Astronomy Open House at Embry-Riddle;
   - Open lecture for the Society of Physics Students at FIT (2013) and ERAU (2016);
   - Maintenance of a website of scientific activities @ www.jeremy.riousset.com.