Workshop on Relativistic Plasma Astrophysics, Purdue University, May 11-14 2026

Sunday May 10th

5pm – Reception at Maxim Lyutikov's house, 1200 Kingswood Rd South, West Lafayette, IN 47906

MONDAY May 11th, PHYS 223

8:50-9:00 Opening remarks/welcome - Maxim Lyutikov

Special Session

9:00 Dmitri Uzdensky - Plasmoids and friends: magnetic reconnection symphony in 4 instabilities
9:30 Federico Fiuza - Relativistic beam-plasma instabilities under the quasistatic approximation
10:00 Muni Zhou - Kinetic Turbulence

10:30-11:00 **Coffee break**

11:00 Paulo Alvez - Parametric scattering of lasers in the laboratory
11:30 Stas Boldyrev - Anisotropic particle acceleration in relativistic plasma turbulence
12:00 A brief tribute to Nuno Loureiro by his students

12:30-1:30 **Discussion & Lunch**

FRBs

1:30 Andrei Beloborodov - FRB emission by magnetars
1:50 Kavin Tangtartharakul - Complete reflection of nonlinear electromagnetic waves in underdense pair plasmas enabled by dynamically formed Bragg-like structures
2:10 Maxim Lyutikov - Anderson self-localization of light in pair plasma
2:30 Emanuele Sobacchi - Interaction of strong electromagnetic waves with pair plasmas

2:50-3:30 **Coffee break**

3:30 Chris Thompson Intermediate-Scale Fast Radio Bursts from Magnetars
3:50 Pablo Bilbao - Non-linear X-mode propagation in highly magnetized pair plasmas

4:10 Yajie Yuan - Monster shock and FRB emission

4:30 Poster presentations

5:00-5:30 - **Discussion**

Conference dinner

TUESDAY May 12th, PHYS 223

Pulsars and magnetars

9:00 Ioannis Contopoulos - 3D pulsar magnetospheres: new/old features
9:20 Jasmine Parsons - Electromagnetic precursors to binary neutron star mergers: Kinetic simulations of magnetospheric flaring
9:40 Alex Chen - Connecting Pulsar Magnetospheric Physics to their Surface Emission

10:00-11:00 **Coffee break**

11:00 Mikhail Medvedev - Relativistic plasma in a neutron star magnetosphere under substantial energy loss
11:20 Jim Drake - Electron and proton heating and energization during non-relativistic magnetic reconnection in macro-scale systems

Magnetic reconnection, shock & turbulence

12:00-1:30 **Discussion & Lunch**

1:30 Anatoly Spitkovsky - Transition to Petschek reconnection in electron-ion and pair plasmas.
1:50 Vladimir Zhdankin - Particle acceleration in shock-mediated relativistic kinetic turbulence
2:10 Omar French- Energetic neutrinos from a reconnecting coronal magnetic field

2:30-3:30 **Coffee break**

3:30 Giuseppe Arro - Nonthermal Particle Acceleration by Magnetic Pumping in Pulsating Plasmas
3:50 Agnieszka Wierzchucka - Double-Adiabatic Equation of State for Relativistic Plasmas

4:10-5:30 **Discussion and Poster presentations**

Dinner: on your own

WEDNESDAY May 13th, PHYS 223

Black holes, disks, jets

9:00 Elias Most - Bridging Scales with Computational Relativistic Astrophysics: From Microphysics to Macroscopic Flows
9:20 Andrew MacFadyen - Gas Rings around Binary Black Holes
9:40 Lorenzo Sironi - Hadronic processes in black hole magnetospheres

10:00-11:00 **Coffee break**

11:00 Krzysztof Nalewajko - Distortions of relativistic jets echoing magnetic flux eruptions
11:20 Luca Comisso - Turbulence-driven particle acceleration and neutrino production near black holes
11:40 Omer Bromberg - Magnetic field evolution in tidal disruption events of magnetized stars.

12:00-1:30 **Discussion & Lunch**

1:30 John Mehlhaff - Collisionless black hole accretion with angular momentum
1:50 Jonathan Zrake - Tme-evolving disks around merging binaries
2:10 Alexander Tchekhovskoy - Universal radial profile of spherical-ish magnetized rotating black hole accretion

2:30-3:30 **Coffee break**

3:30 Dimitrios Giannios - Particle acceleration in relativistic shock: lessons from GRB afterglows
3:50 Asaf Pe'er - The effect of radiation on the dynamics of accretion disks in the MAD state

THURSDAY May 14th, PHYS 223

9:00 - 12:00 Free discussion