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Pulsar magnetospheres and their radiation

Thursday, December 14, 2023 2:05 PM (25 minutes)

In this talk I will review recent progress in understanding the complex multi-scale plasma physics of neutron star magnetospheres through the lens of first-principles particle-in-cell simulations. I will highlight pair production discharges near the stellar surface and radiative magnetic reconnection near and beyond the light cylinder. I will extensively discuss their role in powering the multi-wavelength non-thermal radiation of pulsars, which spans almost 20 decades in photon energy, from enigmatic coherent radio waves to recently detected 20TeV emission in Vela.

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