Plasma Based Accelerators
For Ultra High Energy Colliders

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11:10 am - 12:00 Noon
Building 53, Room 215
Pizza will be served!

Abstract: Recent experiments at SLAC demonstrated beam-driven plasma acceleration with accelerating gradients in excess of 150 GeV/m. That's nearly 10,000 times the accelerating gradient produced by radio-frequency cavities in the SLAC linear accelerator. Wakefield accelerators are a promising technology for future high energy colliders and were identified by the P5 Panel as a path toward 10 TeV collisions. The US 10 TeV Wakefield Collider Design Study is currently being formed in response to P5's recommendation. In this talk, I'll discuss challenges and R&D opportunities for a 10 TeV Wakefield Collider, and highlight opportunities for engagement with High Energy Physics theorists and experimentalists. I will highlight specific challenges related to the extreme fields present in beam-beam collisions, and how we can study those fields at the E320 Experiment at FACET-II.

Bio: Dr. Spencer Gessner is an Assistant Professor of Particle Physics and Astrophysics at SLAC National Accelerator Laboratory and Stanford University. Dr. Gessner was previously a Staff Scientist at SLAC researching plasma wakefield acceleration at FACET-II, and a Fellow at CERN on the AWAKE proton beam-driven plasma acceleration experiment. Dr. Gessner earned a Ph.D. from Stanford University studying the acceleration of positron beams in plasma. Dr. Gessner is currently coordinating the US 10 TeV Wakefield Collider Design Study and is broadly involved in research on future colliders from Higgs Factories to future Energy Frontier machines.