

Thursday, September 23rd, 2021

4:00 PM – 5:00 PM, Virtual

<https://asu.zoom.us/j/86960690591>



Anomalous Quark-Gluon Plasma

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Abstract:

The hot quark-gluon plasma, produced by heavy-ion collisions (or the so-called "Little Bangs"), is one of the most exotic states of matter. Not only is it the hottest, but also the most vortical, the most magnetized, and the most ideal fluid created by humans in a laboratory. The quark-gluon plasma of Little Bangs may also allow unusual macroscopic realizations of the quantum chiral anomaly. In this talk, I will discuss the underlying physics and observable implications of several anomalous properties of the quark-gluon plasma, including the chiral separation and chiral magnetic effects. I will also briefly discuss the possibility of realizing similar anomalous phenomena in novel condensed matter materials, known as Dirac and Weyl semimetals.

Biography:

Igor Shovkovy is a Professor in the College of Integrative Sciences and Arts at Arizona State University. He received his doctoral degree in Theoretical Physics from the Bogolyubov Institute of Theoretical Physics in Kyiv, Ukraine (1997). He had postdoctoral training at the University of Cincinnati (1997–2000), the University of Minnesota (2000–2002), and Johann Wolfgang Goethe–University in Frankfurt on Main (2002–2004). Before joining Arizona State University, Dr. Shovkovy held a Junior Fellow position at the Frankfurt Institute for Advanced Studies (2004–2006) and an Assistant Professor position at Western Illinois University (2006–2008). Professor Shovkovy's expertise includes theoretical nuclear physics, high-energy and condensed matter physics. He is one of the co-authors of the book "Electronic Properties of Dirac and Weyl Semimetals," published recently by World Scientific, Singapore (2021).

Host: Prof. Tanmay Vachaspati

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