Colloquium Series SMSS

School of Mathematical & Statistical Sciences

Guest Speaker: Dr. Bhimsen K. Shivamoggi

Department of Mathematics, University of Central Florida

Stellar Rotation Effects on the Stellar Wind

Abstract:

We discuss the role of the azimuthal stellar wind flow in the stellar-rotation braking mechanism [BK1]. The stellar rotation is shown to cause the slow magnetosonic critical point to occur lower in the corona, so the stellar wind experiences a stronger afterburner (as in an aircraft jet engine) action in the corona, and hence an enhanced stellar wind acceleration. Stellar rotation effects are shown to produce considerably enhanced stellar wind acceleration even for moderate rotators like Sun. For strong rotators, the stellar wind is shown to experience an immensely enhanced acceleration in a narrow shell adjacent to the star. For strong rotators, the magnetosonic critical point is shown to be determined only by the basic stellar parameters like mass and angular velocity of the star. [BK1] B. K. Shivamoggi, Phys. Plasmas 27, 012902, (2020), Editor's Pick paper.

About the speaker:

Dr. Shivamoggi is a professor at Department of Mathematics and Physics, UCF, whose work focuses on fluid dynamics. After completing his M.S at MIT and Ph.D. at University of Colorado Boulder, he worked as a postdoc at Princeton University. Later on, he became a full professor at both Department of Mathematics and Department of Physics, UCF. He has been awarded a Senior Fellow of Japan Society for Promotion of Science (JSPS) in 1995, Professional Excellence Award from UCF in 1999 and U.S. Physics Professorship Award from APS in 2010. So far, he published three monographs and six graduate textbooks.

Date: Tuesday November 24, 2020

Time: 3:00 – 4:00 PM

Zoom link: https://utrgv.zoom.us/j/9082139008

If you have any questions please contact Dr. Baofeng Feng (<u>baofeng.feng@utrgv.edu</u>) or Dr. Elena Poletaeva (<u>elena.poletaeva@utrgv.edu</u>).