Colloquium

CANCELED: Stars in the age of space asteroseismology: towards a coherent modeling of their dynamics along their evolution

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Host: Lisa Bugnet

Stars are the elementary building blocks of the Universe. Their evolution has a profound impact on all fields of modern astrophysics, from the largest cosmological and galactic scales to the scales of planetary systems. Additionally, stars are rotating, host potentially strong magnetic fields, and are among the most turbulent objects in the Universe. These dynamical processes strongly influence their environment.However, before the launch of the Solar and Heliospheric Observatory (SOHO) to observe the Sun and the CoRoT space mission to characterize stars hosting planets, these dynamical processes were largely ignored when studying the evolution of stars. Stars were considered to be spherical objects in hydrostatic and radiative equilibrium, evolving because of their internal nuclear reactions. We were blind to their internal dynamics.Less than 30 years later, thanks to the development of space-based helio- and asteroseismology, we are now exploring the rotation and magnetism of the Sun and of stars from their surface to their deep interior. Helio- and asteroseismic observations are challenging the predictions of state-of-the-art stellar structure and evolution models, from our understanding of the chemical mixing occurring in stars to our global understanding of momentum transport along their evolution.In this seminar, I will give a global overview of our most recent progress in modeling the magneto-hydrodynamical mechanisms in action in stars, their successes, and the remaining challenges. This will show how we are now aiming to understand the global circulation in stars, as meteorologists do for our Earth.

Monday, January 22, 2024 11:30am - 12:30pm
Raiffeisen Lecture Hall

This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station. Please find a schedule of the ISTA Shuttle on our webpage: https://ista.ac.at/en/campus/how-to-get-here/ The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.