Colloquium

How the Brain Keeps Us in Balance: Neural Circuits that Maintain Homeostasis | Electromagnetic and Gravitational-Wave Signatures of Merging Black Holes

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ISTA

Host: Sandra Siegert & Chris Wojtan

Amelia Douglass |How the Brain Keeps Us in Balance: Neural Circuits that Maintain HomeostasisThe survival of every organism depends on maintenance of the body's internal environment in the face of a demanding external world. This state of equilibrium, known as homeostasis, is controlled by the brain. By detecting challenges to homeostasis- such as hunger or stress- the brain initiates adaptive changes in both behavior and physiology that restore stability. These adjustments rely on continuous, bi-directional dialogue between the brain and the body, mediated by intricate neural circuitry that we are only just starting to unravel.In this talk, I will highlight recent progress in uncovering this brain-body interplay and the conceptual and technological advancements that have made these discoveries possible. I will focus particularly on the hypothalamus- a small but critically important brain region that serves as a central hub for homeostatic control. Through this lens, I will discuss fundamental principles and neural circuitry underlying how the brain maintains stability in the face of constant challenges._____Zoltan Haiman |Electromagnetic and Gravitational-Wave Signatures of Merging Black HolesAmong the few interesting things they can do, black holes can collide and merge, forming bigger black holes, emitting copious gravitational waves (GWs) in the process. These black hole mergers should often take place in gas-rich galactic nuclei, and therefore also produce concurrent electromagnetic (EM) emission. I will discuss the science we expect to do with the joint detections of GW and EM signatures in the next decade, and what we need to do to make this happen.

Monday, January 12, 2026 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.