



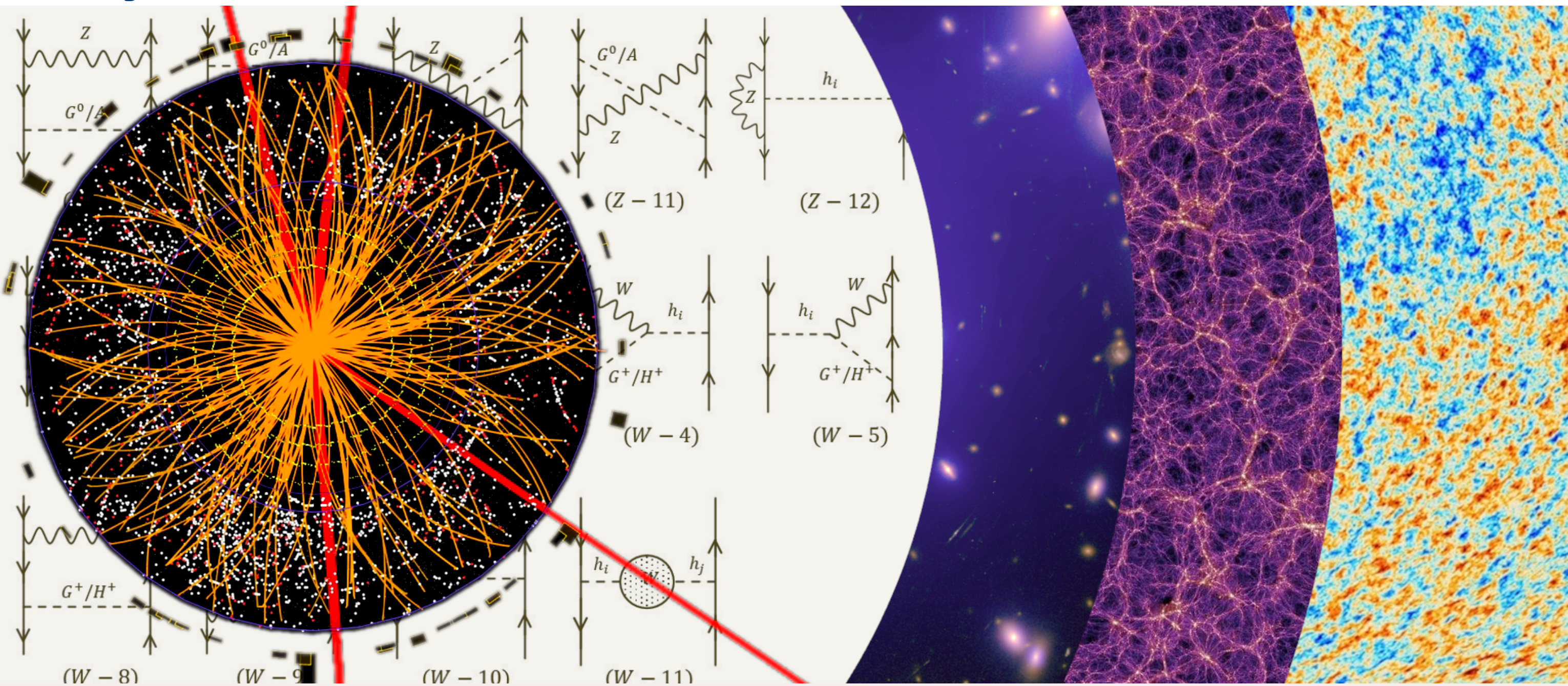
APC Colloquium

Wednesday · September 16th 2026 · 11:00
Salle Pierre-Gilles de Gennes, Bâtiment Condorcet

Shinya Kanemura

University Of Osaka · Department of Physics · Japan

The Higgs: A Window on New Physics and the Early Universe



R É S U M É

The discovery of the Higgs boson completed the particle content of the Standard Model (SM), but fundamental questions remain unanswered: What is dark matter? Why is our Universe dominated by matter rather than antimatter? The Higgs may provide a unique connection between these questions and physics at the energy frontier.

In many theories beyond the SM, the Higgs sector is extended, leading not only to new particles and deviations in Higgs properties, but also to a very different history of the early Universe. A particularly intriguing possibility is a first-order electroweak phase transition, which could have shaped the evolution of the early Universe and left observable signatures that we can search for today.

In this colloquium, I will use electroweak baryogenesis as an example to illustrate how Higgs physics can connect particle physics with cosmology. I will discuss how the underlying new physics can be explored through complementary probes, ranging from collider and electric-dipole-moment experiments to gravitational waves and even primordial black holes. Together, these complementary observations may allow us to use the Higgs as a probe of the thermal history of the early Universe.



Astroparticule et Cosmologie

www.apc.in2p3.fr