Laboratoire de Physique Théorique et Hautes Energies

Unité Mixte de Recherche (UMR 7589) de Sorbonne Université et du CNRS

SEMINAIRE du LPTHE

Mardi 17 Mai 2022, 14:00

Graham White

IPMU

Archaeology on the origin of matter

One of the most convincing reasons to expect physics beyond the Standard model is the inbalance between matter and anti-matter. Some fantastic paradigms exist that can be probed at a low scale including electroweak baryogenesis, mesogenesis and resonant leptogenesis. While these paradigms or worthy of dedicated attention, the elephant in the room is that there are two paradigms that are very minimal and involve physics at scales we cannot possibly reach with Earth based colliders in our life time. I will first discuss the nightmare scenario of thermal leptogenesis implemented with no BSM particle content beyond sterile neutrinos and an inflaton. In this case, measurements of the top and Higgs mass along with inflationary observables can shed some light on the plausibility, or lack thereof, of vanilla leptogenesis. I will then discuss the GUT leptogenesis and Affleck Dine baryogenesis. I argue in both these cases there are generic predictions of a primordial gravitational wave background that can be measured today. The presence of such a signal would lend plausibility to one of these scenarios. Finally I discuss the discriminating power of GWs in discerning the symmetry breaking path through the variable signals of hybrid defects.

Bibliothèque du LPTHE, tour 13/14, 4ème étage

N.B. La liste de tous les séminaires en région parisienne est disponible sur
http ://semparis.lpthe.jussieu.fr