

**Irfu**Institut de recherche  
sur les lois fondamentales  
de l'Univers**Séminaire  
DPhP****Lundi 10/12/2018, 11h00**

CEA-Saclay Bât. 141, salle André Berthelot

---

**AWAKE : a proton driven plasma wakefield  
experiment****EDDA GSCHWENDTNER**

CERN

---

AWAKE is an accelerator R&D experiment at CERN to demonstrate for the first time ever plasma wakefield acceleration of electrons in wakefields driven by a proton bunch and, in the future, take advantage of the large energy store in the proton bunch to reach very high energy gain in a single plasma. In 2016/2017 AWAKE has achieved a major milestone and observed the strong modulation of high-energy proton bunches in plasma; the results represent the first ever demonstration of strong plasma wakes generated by proton beams. In May 2018 AWAKE demonstrated for the first time the acceleration of externally injected electrons to multi-GeV energy levels in the proton driven plasma wakefields, a result recently published in Nature. The aims of AWAKE Run 2 (2021 - 2024) are to achieve high-charge bunches of electrons accelerated to high energy, about 10 GeV, while maintaining beam quality through the plasma and showing that the process is scalable. The final goal by the end of AWAKE Run 2 is to be in a position to use the AWAKE scheme for particle physics experiments. The AWAKE experiment is described. The recent results are shown. The design and challenges of AWAKE Run 2 are presented. Particle physics experiments based on the AWAKE acceleration scheme are introduced.

---

Le café sera servi 10 minutes avant.

NB : La présentation d'une pièce d'identité est exigée à l'entrée du centre. Tous les auditeurs extérieurs sont priés de prévenir à l'avance Martine Oger, tél. 01 69 08 23 50, e-mail : [martine.oger@cea.fr](mailto:martine.oger@cea.fr). (U.E. : délai de 24 h, hors U.E. : délai de 4 jours).