

**Lundi 20/05/2019, 11h00**

CEA-Saclay Bât. 141, salle André Berthelot

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**Real time triggering and event  
reconstruction in LHCb, its upgrade and  
beyond**

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The LHCb trigger system used in the LHC RUN1 and RUN2 consisted of a hardware level, reducing the LHC bunch-crossing rate of 40 MHz to 1 MHz, a rate at which the entire detector was read out. A second level, implemented in a farm of around 20k parallel processing CPUs, the event rate was reduced to around 12.5 kHz. The LHCb experiment is undergoing a major upgrade of the detector, the DAQ system and the computing farm during the LHC long shutdown II (2018-2019).

In this upgrade, a purely software based trigger system is being developed and it will have to process the full 30 MHz of bunch crossings with inelastic collisions exploiting multi-threading and parallel processing in real-time. LHCb will also receive a factor of 5 increase in the instantaneous luminosity, which further contributes to the challenge of reconstructing and selecting events in real time with the CPU farm. I will discuss the progresses achieved in the LHCb event software and real time event reconstruction in the recent years, the plans and the progresses towards the commissioning of the LHCb upgrade and the plans beyond the LHCb upgrade.

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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).