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## **Multilepton and Multiphoton signatures of SUSY at the LHC**

*vendredi 21 mars 2014 09:35 (15 minutes)*

Motivated by the absence of any clear signal of physics beyond the Standard Model (SM) at the LHC after Run 1, I will discuss one slight (but tantalizing) hint of new physics and one non-minimal extension of the SM. In the first part of the talk I will do the exercise of explaining a small excess of multilepton events recently observed by the CMS collaboration by means of a simplified model of gauge mediated supersymmetry breaking (GMSB). In the second part of the talk I will discuss how the standard phenomenology of GMSB can be significantly modified by the non-minimal assumption that supersymmetry is broken in more than one hidden sector. Multiple hidden sectors give rise to light neutral fermions called pseudo-goldstini and due to the extra decay steps they give rise to, where soft photons are emitted, these models give rise to multiphoton plus missing energy signatures. I will compare against existing LHC searches and propose new searches designed to probe these models.

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**Classification de Session:** Beyond the Standard Model

**Classification de thématique:** Theory