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## **Measurements of $t\bar{t}+X$ using the ATLAS detector (15' + 5')**

*Thursday, 4 August 2016 10:20 (20 minutes)*

The large integrated luminosity provided by the LHC enables the production of a significant number of top-quark pairs in association with additional jets or additional gauge bosons. The production of top-quark pairs in association with W and Z bosons is presented. The measurement uses events with multiple leptons and in particular probes the coupling between the top quark and the Z boson. The cross-section measurement of photons produced in association with top-quark pairs is also discussed. The production cross-section of top-quark pairs in association with additional light or heavy jets is presented. These processes are important backgrounds to searches for new physics and are all compared to the best available theoretical calculations.

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**Session Classification:** Top Quark and Electroweak Physics

**Track Classification:** Top Quark and Electroweak Physics