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	Sommario/riassunto	This thesis deals with two main procedures performed with the ATLAS detector at the Large Hadron Collider (LHC). The noise description in the hadronic calorimeter TileCal represents a very valuable technical job. The second part presents a fruitful physics analysis – the cross section measurement of the process $p + p$ Z0 + . The Monte Carlo simulations of the TileCal are described in the first part of the thesis, including a detailed treatment of the electronic noise and multiple interactions (so-called pile-up). An accurate description of both is crucial for the reconstruction of e.g. jets or hadronic tau-jets. The second part reports a Standard Model measurement of the Z0 + process with the emphasis on the final state with an electron and a hadronically decaying tau-lepton. The Z0 + channel forms the dominant background in the search for Higgs bosons decaying into tau lepton pairs, and thus the good understanding achieved here can facilitate more sensitive Higgs detection.