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A Search for a Scalar Resonance using Di-Photons in Association with a lepton and a b-jet with the ATLAS Detector

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The Multi-lepton anomalies at the LHC are indicative of a scalar resonance with a mass around 150 ± 5 \GeV in the $\gamma\gamma$ and $Z\gamma$ spectra in association with leptons and jets with a global significance of 5.4σ . This provides a compelling avenue for exploring new physics beyond the Standard Model using the di-photon channel. This project investigates the hypothesized resonance, where the scalar decays into a photon pair accompanied by a muon or electron and a *b*-jet $S(\rightarrow \gamma\gamma) + \geq 1\ell + b$ -jet. An analysis of the ATLAS data will be done in this channel, using the easyjet analysis framework, thus possibly reinforcing the hypothesis.

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