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Combined angular analysis of $B \rightarrow D^* e \nu_e$ and $B \rightarrow D^* \mu \nu_\mu$ with the LHCb detector

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Several intriguing hints on deviations from the SM predictions have appeared in the studies of decays of B hadrons (hadrons containing the beauty (b) quark) involving leptons. The standard model contains three lepton families: electrons, muons, and tau-leptons, each accompanied by the corresponding type of neutrino. The most striking deviation is the hint on violation of lepton flavor universality (LFU), which states that the interactions of the electroweak bosons with the leptons are independent of the lepton flavor. One of the examples of such deviation between B hadron semileptonic decay with electron and with muon in the final state was recently discovered by Belle collaboration by measuring the values of forward-backward lepton asymmetry and D^* polarization. We plan to cross-check Belle results at the LHC hadron collider, obtain these angular coefficients from a model-independent fit of angular distributions, and compare the values with the standard model predictions. We conduct MC studies to measure the resolution of the neutrino reconstruction procedure, estimate expected statistical uncertainty, and test the sensitivity of the model-independent template fit approach to the different NP scenarios. All current results were obtained on simulation. The next step is to check the data-MC agreement and perform fit on the data

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