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Inclusive semileptonic $D_s \mapsto X \ell \nu$ decay from lattice QCD

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We present a fully non-perturbative computation of the inclusive semileptonic $D_s \mapsto X \ell \nu$ decay and its leptonic moments from lattice QCD. A first principles computation of such observable has a phenomenological relevance since its comparison with experimental data allows for stringent Standard Model tests in the sector of Flavour physics. Additionally, this work sets the stage to a future project involving the B meson(s). The computation, performed employing state-of-the-art ETMC ensembles at the physical point with four lattice spacings and three volumes, is carried out by extracting smeared spectral densities from Euclidean four-point correlation functions. In this talk we focus on the theoretical background and the methodology, which implies solving an ill-posed inverse Laplace transform. This can currently be achieved with controlled statistical and systematic uncertainties by using the Hansen-Lupo-Tantalo method.

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