

Contribution ID: 387 Type: Talk

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

Tuesday, 30 July 2024 15:05 (20 minutes)

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.

Primary author: Dr DE SANTIS, Alessandro (University of Roma Tor Vergata and INFN)

Co-authors: EVANGELISTA, Antonio (University and INFN of Rome Tor Vergata); MELIS, Aurora (RomaTre University); SMECCA, Antonio (Swansea University); URBACH, Carsten (University of Bonn); GROSS, Christiane (HISKP, Bonn University); MARGARI, Francesca (Univ. of Roma Tor Vergata and INFN - Roma Tor Vergata); SAN-FILIPPO, Francesco (Infn, sezione di Roma Tre); GAGLIARDI, Giuseppe (Infn, sezione di Roma Tre); GAROFALO, Marco (University of Bonn); PANERO, Marco (University of Turin and INFN Turin); TANTALO, Nazario (Rome University Tor Vergata and INFN sez. of Rome Tor Vergata); GAMBINO, Paolo; FREZZOTTI, Roberto (University of Rome Tor Vergata, Physics Department and INFN - Sezione di Roma Tor Vergata); Prof. SIMULA, Silvano (INFN Roma Tre); Prof. LUBICZ, Vittorio (Università Roma Tre and INFN)

Presenter: Dr DE SANTIS, Alessandro (University of Roma Tor Vergata and INFN)

Session Classification: Quark and lepton flavour physics

Track Classification: Quark and Lepton Flavour Physics