



Contribution ID: 253

Type: **Talk**

## Electromagnetic corrections to the leptonic decay rates of charged pseudoscalar mesons: lattice results

*Wednesday, July 27, 2016 12:10 PM (20 minutes)*

Electromagnetic effects on the leptonic decay rates  $\pi^+ \rightarrow \mu^+ \nu$  and  $K^+ \rightarrow \mu^+ \nu$  are evaluated for the first time on the lattice.

Following a method recently proposed in Ref. [1] the emission of virtual photons at leading order in the e.m. coupling is evaluated on the lattice with the subtraction of the infrared divergence computed for a point-like meson at finite lattice volume.

The physical decay rate is then obtained by adding the emission of real photons regularized with a photon mass.

Using the gauge ensembles produced by ETMC with  $N_f=2+1+1$  dynamical quarks the feasibility of the lattice approach is demonstrated and preliminary results for the decay rates of charged pion and kaon will be presented.

[1]. N. Carrasco et al., Phys. Rev. D91 (2015) 074506.

**Primary author:** Prof. LUBICZ, Vittorio (University of Roma Tre)

**Co-authors:** Dr TARANTINO, Cecilia (University of Roma Tre); Prof. SACHRAJDA, Christopher T. (University of Southampton); Dr SANFILIPPO, Francesco (University of Southampton); Prof. MARTINELLI, Guido (University of Rome "La Sapienza"); Dr TANTALO, Nazario (University of Roma Tor Vergata); Dr SIMULA, Silvano (INFN - Roma Tre)

**Presenter:** Dr SIMULA, Silvano (INFN - Roma Tre)

**Session Classification:** Weak Decays and Matrix Elements

**Track Classification:** Weak Decays and Matrix Elements