

### Abstract

The decay  $K^+ \rightarrow \pi^+ \nu \bar{\nu}$  has one of the most precisely predicted branching ratio at the level of  $10^{-10}$ . It is forbidden at the tree level, which makes it sensitive to the effects of new physics. The NA62 experiment at the CERN SPS aims to measure the branching ratio of the  $K^+ \rightarrow \pi^+ \nu \bar{\nu}$  using a unique decay-in-flight technique. NA62 took data so far in 2016-2018. The statistics acquired in 2016 allowed to reach Standard Model sensitivity for  $K^+ \rightarrow \pi^+ \nu \bar{\nu}$ . Owing to the statistics collected in 2017, NA62 surpasses the present best sensitivity. In the scope of this thesis, the preliminary result obtained from 2017 data sample is reported.