

NA62 Kaon Physics Handbook



Monday, January 11, 2016 - Friday, January 22, 2016

Mainz Institute for Theoretical Physics, Johannes Gutenberg University

Scientific Program

The purpose is to assess the opportunities offered by the study of kaons and light mesons using the new NA62 experiment at CERN. The experiment just started to collect data in 2015 and will continue to do so at least until the end of 2018 before CERN will go into a two year maintenance shutdown called Long Shutdown 2 (LS2). The purpose of this Scientific Programme is two-fold:

1. We can expect a useful flux of 10^{13} kaon decays before 2019. The main goal of the experiment is to study $K^+ \rightarrow \pi^+ \nu \bar{\nu}$; what else is interesting?

2. Is there something compelling to measure with even more kaon decays? A better measurement of $K^+ \rightarrow \pi^+ \nu \bar{\nu}$? What about K^0_L ? Is there any interest in π^+ decays (the NA62 beam is mostly pions...)? What about π^0 ? Point number 2. address a time after 2018 and could naturally feed input into the longer term European Strategy for particle physics to be revised around 2018.

What makes NA62 special is:

1. High momentum hadron beams for excellent energy resolution

2. Complete coverage for study of elusive exclusive decays

3. Excellent particle identification

4. Large Acceptance

5. High rate, quasi-massless tracking to minimize beam induced backgrounds and unwanted interactions between the particles and the detector.

The format of the Programme foresees typically two talks per day and (at 11:00 and 15:00) and plenty of time for discussion. The intention is to gather together all contributions into a "NA62 Physics Handbook"

Rare Decays