Contribution ID: **122** Type: **not specified**

Thermal Simulations For the Super-FRS Slit System

X- and Y position slit systems will be used as collimator for stopping the unwanted charge states of primary beam and fragments produced at the reaction target of the in-flight Superconducting Fragment Separator (Super-FRS) at the FAIR facility, GSI. In the case of the most frequently used fission reaction of 238U beam at 1.5 GeV/u on 12C target (2.5 g/cm2) , the most abundant charge states of 238U fragments produced at the target are 92+, 91+ and 90+ ions. Among these fragments, 90+U fragments with 2.7% emission probability from the target may reach the FPF2 X-slits with an energy of about 1.3 GeV/u with a maximum power of 500 W. This value represents an upper limit, because the intensity will be lower for lower charge states produced, and at the other slit positions. A block of high-density material with 96% of Tungsten, 3% of Nickel and 1% of Iron, named as DENSIMET@185 has been proposed to be used as a slit in Super-FRS pre and main separator areas. Thermal simulations are carried out to estimate the maximum and minimum temperature values on the slits and -on the apparatus in the neighbourhood of the slits. Several cooling methods have been simulated on a block of DENSIMET with a proposed dimensions 200 mm X 180 mm X 250 mm, and which will be used in the pre-separator area of Super-FRS beam line. The present results from the thermal simulations suggest a new way of cooling technique to lower the temperature of the block by substantial amounts without any water cooling during experiments at Super-FRS beam lines.

Primary author: Dr GELLANKI, Jnaneswari (KVI, Groningen University)

Co-authors: Dr NOCIFORO, C. (GSI); Mr SMIT, H.A.J (KVI, Groningen University); Mr TIMERSMA, H.J. (KVI, Groningen University); Mr LINDEMULDER, M.F. (KVI, Groningen University); Prof. NAYETANAKI, N. Kalantar (KVI, Groningen University); Mr KUIKEN, O.J. (KVI, Groningen University)

Presenter: Dr GELLANKI, Jnaneswari (KVI, Groningen University)