
## Poster session 4 – Friday 8 July

P4.084 **Detecting fast time variations in the supernova neutrino flux with hyper-kamiokande**

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*on behalf of Hyper-Kamiokande collaboration*

In the event of a galactic supernova, the proposed Hyper-Kamiokande detector will be the first neutrino observatory capable of delivering a high event rate whilst reconstructing individual neutrino events.

In this poster, I present my analysis of a three-dimensional supernova simulation provided by the Garching group. In that simulation, the number flux and mean energy of the neutrinos exhibit oscillations with a frequency of ∼100 Hz, which are caused by the standing accretion shock instability (SASI). My goal was to determine whether the energy information available from Hyper-Kamiokande can be used to increase the probability of detecting these fast time variations in the neutrino number flux.

In the investigated simulation, the oscillations of the number flux and the mean energy are in phase. Accordingly, the amplitude of number flux oscillations is energy-dependent. I was able to show that the larger amplitude in some energy bins is not sufficient to counteract the increased noise caused by the lower event rate. Finally, I derived a condition for when it is advantageous to consider an energy bin instead of the total signal, and demonstrated that this condition is satisfied if the amplitude of the mean energy oscillations is increased slightly