

# Physics opportunities at the ESSnuSB/ESSnuSB+ setup

*Tuesday, 18 June 2024 17:30 (2 hours)*

ESSnuSB (European Spallation Source neutrino Super-beam) is an upcoming accelerator-based neutrino oscillation experiment which aims to measure the leptonic CP violation phase by measuring at the second oscillation maximum. The neutrinos produced in the ESS will be detected at a distance of 360 km using half megaton underground water Cherenkov neutrino detector. Additionally, there is a proposal to build a low energy muon storage ring (LEnuSTORM) similar to the nuSTORM project and to build a low energy monitored neutrino beam line (LEMNB), inspired by the ENUBET project. These neutrinos will be detected at several near detectors located at the ESS site. In this poster, I will present the results of the physics scenarios which can be studied in this ESSnuSB+ setup. These physics scenarios can be: (i) beam based scenarios at the far and near detectors, for example, study of neutrino oscillations in standard three flavour scenario and several new physics scenarios (including sterile neutrino, non-standard interaction, quantum decoherence, neutrino decay etc) and (ii) non-beam based scenarios at the far detector, for example study of atmospheric neutrinos and supernova neutrinos. My focus in this poster will be to present results related to beam based physics results in the standard scenario and the results for supernova neutrinos.

## Poster prize

No

## Given name

Monojit

## Surname

Ghosh

## First affiliation

Ruder Bošković Institute, Zagreb, Croatia

## Second affiliation

## Institutional email

mghosh@irb.hr

## Gender

Male

## Collaboration (if any)

ESSnuSB

**Primary author:** GHOSH, Monojit (Ruđer Bošković Institute, Zagreb, Croatia)

**Presenter:** GHOSH, Monojit (Ruđer Bošković Institute, Zagreb, Croatia)

**Session Classification:** Poster session and reception 1

**Track Classification:** Accelerator neutrinos