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## NEUTRINO FACTORY MEET

*World scientists to brainstorm over India's biggest project***Snehal Rebello**

■ snehal.rebello@hindustantimes.com

**MUMBAI:** A team of top scientists from around the world will descend on the Tata Institute of Fundamental Research on Monday to discuss an international collaboration that will benefit India's biggest basic science project, the India-based Neutrino Observatory (INO).

The first phase of the INO, a project that is slated to start in 2012, will study atmospheric neutrinos produced by cosmic rays in the earth's atmosphere.

Neutrinos are fundamental particles whose behaviour is key to understanding the evolution of the universe as well as the energy production mechanisms in the Sun

and other stars.

Over three days, 22 scientists and engineers from the US, UK, Germany, Italy, Japan and India will brainstorm over the Neutrino Factory, a proposed particle accelerator complex that can send neutrino beams through the earth to the Indian's observatory's detectors.

Slated to be functional by 2017, the Neutrino Factory is an international collaboration similar to the Large Hadron Collider at the Geneva-based European Organisation for Nuclear Research, which attempts to reproduce the Big Bang that created the universe.

To be held for the first time in India, the fourth plenary meeting of the

**If the [INO] laboratory is ready, we are eager to join hands since it will help revive basic sciences in the country, and encourage students to pursue the field.**

**NABA MONDAL,**  
INO spokesperson

International Design for the Neutrino Factory will have groups working on designing the accelerator, the detectors and the physics performed in the laboratory.

"The goal of this committee is to submit a proposal for the design, schedule and the cost of the Factory to funding agencies by 2012. INO wants to be a part of the project," said Professor Naba

Mondal, INO spokesperson.

The discussions are important for the second phase INO, when intense beams of neutrinos produced in the accelerator will be shot through the earth from 7,000 km away.

Mondal said while short baseline experiments with beams travelling at 700 km do take place, these are low-intensity beams.

"Travelling 7,000 km is an important aspect since high-intensity beams will interact with the earth's matter and provide information about their masses," said Mondal.

This is where India has an advantage since a beam shot from Europe or Japan to INO will cover the precise 7,000 km needed for the experiment. However, the INO proj-

ect has been delayed by over two years for want of a forest clearance from the Tamil Nadu government.

Environment. Wildlife activists have objected to the site, located 7 km from the Mudumalai Wildlife Sanctuary and Tiger Reserve in the Nilgiri mountains.

The international neutrino community is lobbying hard for the INO. In August, scientists including Nobel Laureates wrote to Prime Minister Manmohan Singh to speed up clearances.

With China and US also planning to build large observatories, India could lose its first-mover advantage. Beams shot from Europe to China or UK to US will also cover the requisite 7,000 km distance.

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