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## Nuclear emulsion detector for future neutrino research - NINJA and EMPHATIC -

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Nuclear emulsion is a three dimensional tracking detector with sub-micron resolution. Thanks to its high spatial resolution, emulsion can detect short-length low energy tracks and measure track angle precisely in neutrino/hadron interactions. Moreover, the emulsion has 4 pi solid angle acceptance (it's also useful to measure low energy tracks) and can use target materials flexibly, not only carbon and iron, but also water. These detector capabilities of nuclear emulsion are suitable to measure neutrino/hadron interaction precisely and therefore it is used in NINJA experiment and EMPHATIC experiment to reduce the systematic uncertainties from neutrino cross-sections and neutrino flux in current and future neutrino oscillation experiments.

In this talk, I will talk the latest developments in nuclear emulsion technology and the status/future prospects of NINJA and EMPHATIC.

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