



Quick Fire Talk : the NINJA experiment

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NINJA Experiment

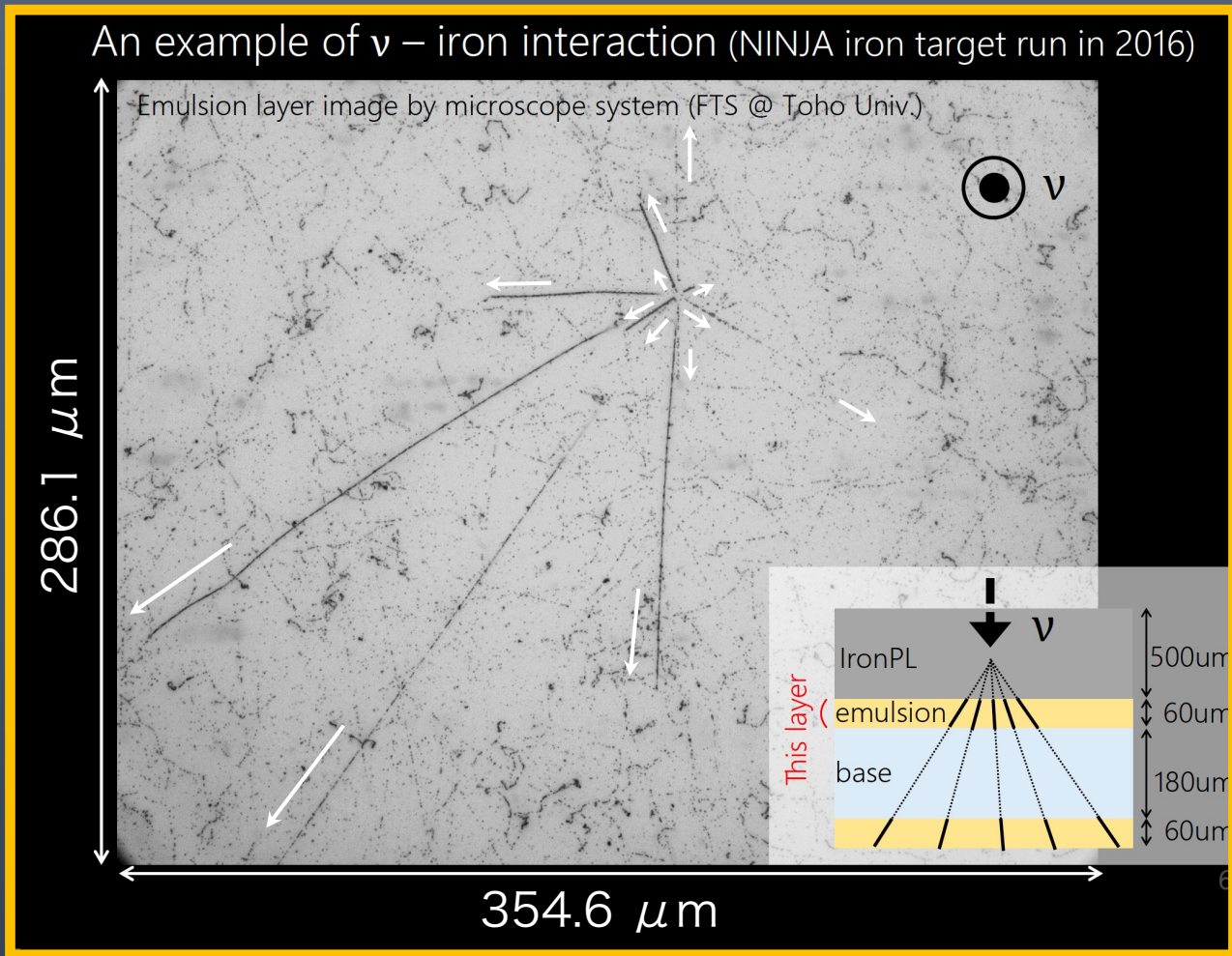
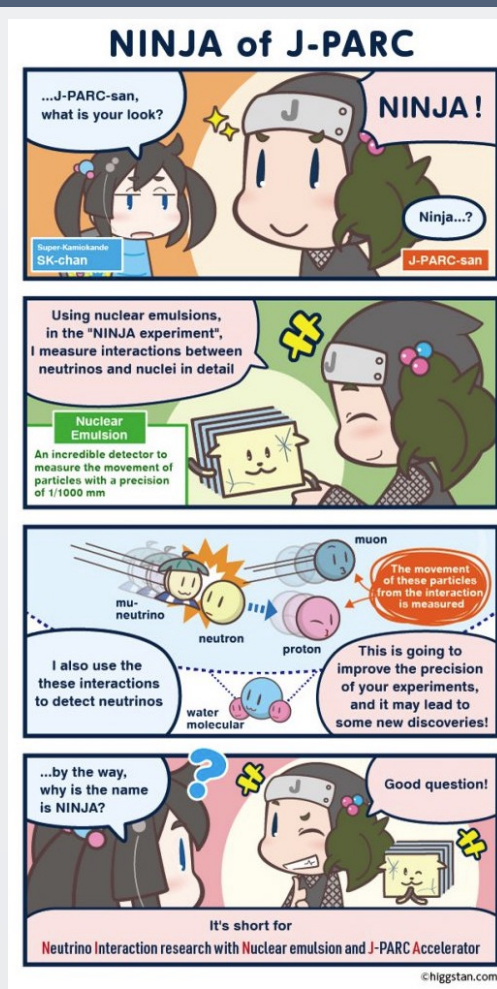
Country: Japan 🇯🇵 · Croatia 🇩🇷 · the UK 🇬🇧 (13 Institutes, ~50 researchers)

We aim to study neutrino-nucleus interactions using the emulsion detector

→ Various targets (H_2O , D_2O , Fe, C, etc.)

@ J-PARC.

→ Low momentum thresholds ~ 200 (50) MeV/c for protons (pions)



Why are we measuring cross sections?

We want to

- ✦ Understand neutrino – nucleus interactions in the sub-GeV to multi-GeV energy region.
 - ✦ Understand neutrino - water interactions and reduce the systematic uncertainties of neutrino interactions in the T2K/HK experiment.
 - ✦ Conduct a sterile neutrino search after understanding neutrino-nucleus interactions in near future.
- ➔ For these motivation, we are measuring cross sections for protons and pions with low-momentum thresholds.

Our contribution to Hyper-K & DUNE

Our measurements and results will lead to a better understanding of neutrino-nucleus interactions:

- ✦ ν - nucleus interactions including nuclear effects
low momentum protons & pions
2p2h interactions
 - ✦ ν - nucleon interactions using Heavy-water & Water
- ➔ Our results are expected to serve as the foundation for building reliable neutrino interaction models.

What we would like to discuss at this workshop

Towards precise understanding neutrino-nucleus interactions and reducing the uncertainties, we would like to discuss

- ✦ What measurements and analyses in which NINJA's emulsion detectors are maximally useful.
- ✦ What measurements of physical quantities would contribute to reducing the systematic uncertainties of the neutrino interaction models.