

HUNTING DARK MATTER AT KAMIOKA

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LIGHT DARK MATTER SEARCH

- Direct detection is a cornerstone of dark matter (DM) searches
- Conventional searches have focused on DM at the GeV mass-scale.

Quantum sensing

Cryogenic system
- ~10mK with dilution refrigerator

Superconducting devices
- TES, MKID, ...
- Fabrications
- Chain test

RF/readout electronics
- 5G/6G technologies
- Quantum limited amplifier

meets X

Low background

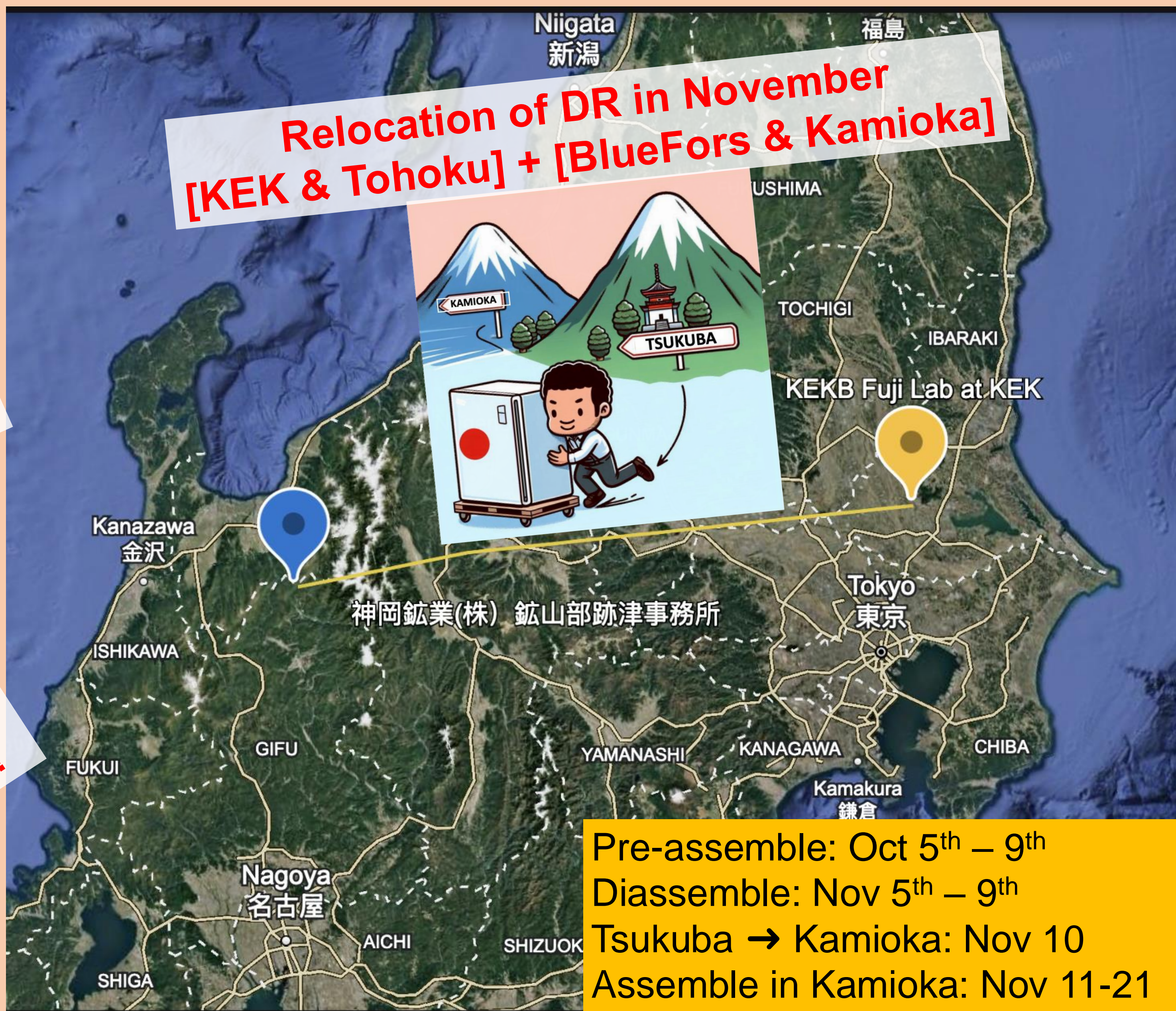
Underground facility at the Kamioka mine
• Protecting system from cosmic-ray

Low environmental radiation
• Understanding impacts of radio activities
• Low radio activities in materials
• Shielding system from radio activities

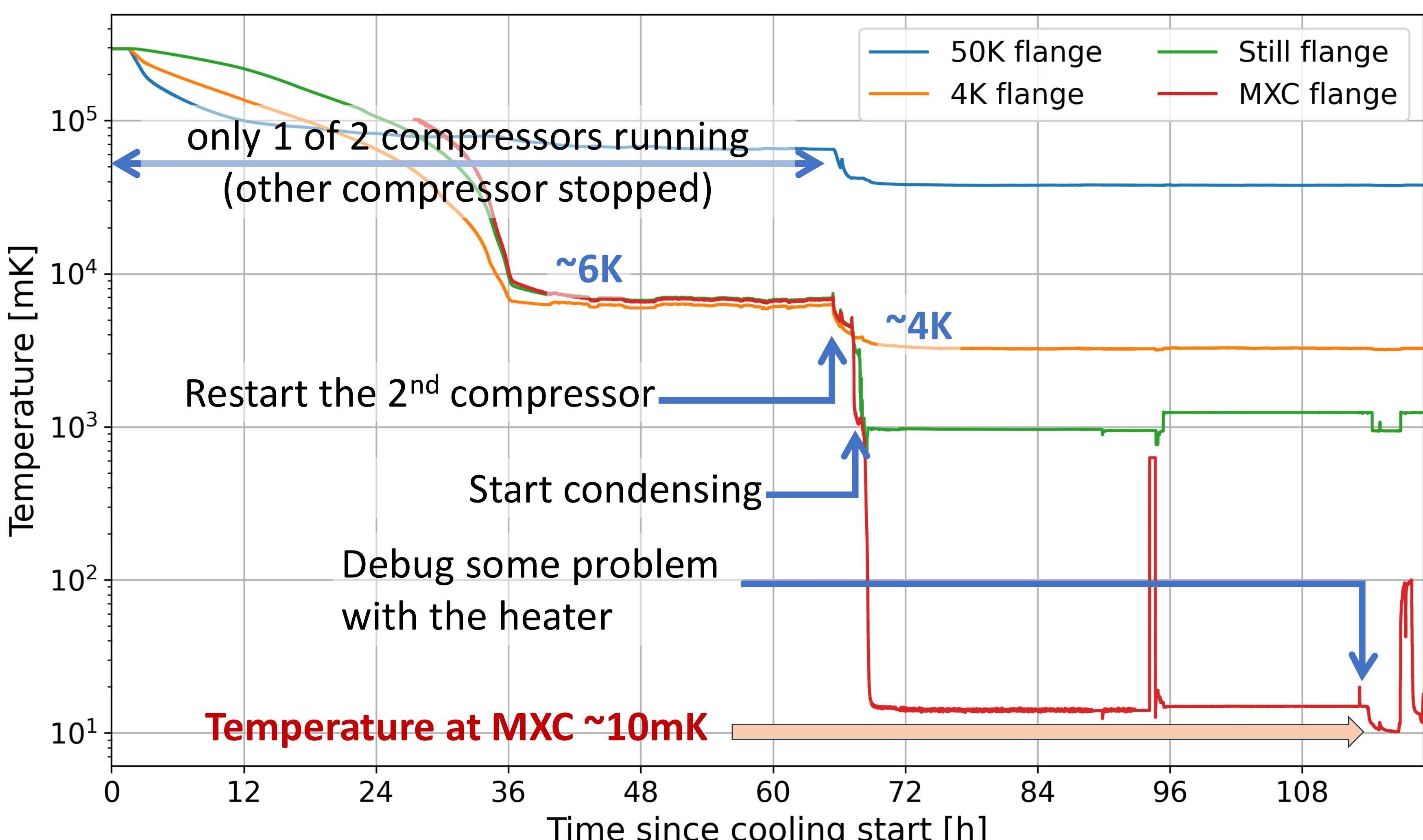
Low systematic fluctuations
• Low thermal noise
• Low vibration

- A new experiment using Transition Edge Sensor technology operated at millikelvin is being planned to search for sub-GeV DM.
- Set up at Kamioka.

RELOCATE DILUTION FRIDGE



PRELIMINARY PERFORMANCE



SENSITIVITY ESTIMATION

