## From Quarks to Neutron Stars: Insights from kHz gravitational waves

23–24 Apr 2025 Koshiba Hall, Hongo Campus, The University of Tokyo Tetsuo Hatsuda (RIKEN)

### **Theory**

Quantum Chromodynamics
Quantum computation
GR simulations

### **Cosmic Observation**

Gravitational wave
Electromagnetic waves
Neutrinos



Liquid helium Unitary fermi gas Bose-Fermi mixture

### **Nuclear Physics**

Nuclear collisions RHIC, LHC, J-PARC FAIR, RIBF, HIAF

# Neutron Star Collision (music, 2010)



https://www.youtube.com/watch?v=MTvgnYGu9bg

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This workshop aims to explore the transformative potential of high-frequency gravitational wave observations for multi-messenger astrophysics, with a focus on their implications for nuclear and neutron star physics.

### Science topics

- Nuclear physics
- Neutron Stars
- · Neutron Star Mergers
- Supernovae
- Gravitational waves (both theory and experiment)
- · Electromagnetic observations
- Neutrino astrophysics









RIKEN Interdisciplinary
Theoretical and Mathematical
Sciences Program





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# Next event?