

**The 4th COE International Symposium**  
**Exploring New Science by Bridging Particle-Matter Hierarchy**

Program

**June 28 (Wed)**

Morning session (Chair: K. Hikasa)

- 09:30 – 09:35 T. Futamase (Member of the COE Steering Committee) Opening address  
9:35 – 10:15 R. Tanaka (Okayama U.) “Getting Ready for the LHC: Accelerator, Detectors and Physics”  
10:15 – 10:40 K. Takenaga (Tohoku U.) “Gauge-Higgs unification  
— an approach to beyond the standard model —”  
10:40 – 11:00 Break  
11:00 – 10:40 K. Melnikov (Hawaii U.) “Physics at the LHC: from Standard Model to New discoveries”  
11:40 – 12:05 K. Nagano (Tohoku U.) “Distance and convexity”  
12:05 – 13:30 Lunch

Afternoon session (Chair: M. Nakamura)

- 13:30 – 13:55 T. Asaka (Tohoku U.) “Neutrino masses, dark matter and baryon asymmetry of the universe”  
13:55 – 14:35 J. Metcalfe (UC Berkeley) “On Keel-Smith-Sogge estimates and quasilinear wave equations  
in exterior domains”  
14:35 – 15:00 M. Ishiwata (Tohoku U.) “Variational aspects of the formation of singularities of solutions  
for some semilinear heat equations”  
15:00 – 15:20 Break

(Chair: K. Tanigaki)

- 15:20 – 16:00 R. Golestanian (U. Sheffield) “Designing Molecular Swimmers”  
16:00 – 16:25 H. Matsueda (Tohoku U.) “Elementary excitations and optical responses in strongly  
correlated electron systems”  
16:25 – 16:50 G. Yusa (Tohoku U.) “Controlled multiple quantum coherences of nuclear spins  
in a nanometer-scale device”

**June 29 (Thu)**

Morning session (Chair: M. Hattori)

- 09:30 – 10:10 B. Jain (U. Penn) “Gravitational Lensing and Cosmology”  
10:10 – 10:35 K. Ichiki (U. Tokyo) “Generating Large-scale Magnetic Fields from Cosmological Density  
Fluctuations”  
10:35 – 10:55 Break  
10:55 – 11:20 T. T. Takeuchi (Tohoku U.) “Visible and Hidden Star Formation in the Universe”  
11:20 – 11:45 M. Takada (Tohoku U.) “Dark Matter and Gravitational Lensing of Galaxy Clusters”  
11:45 – 13:10 Lunch

Afternoon session (Chair: S. Ishihara)

- 13:10 – 13:50 M. Sigrist (ETHZ) “Spin-orbit coupling and superconductivity in materials without  
inversion symmetry”  
13:50 – 14:15 N. Kimura (Tohoku U.) “Noncentrosymmetric heavy-Fermion Superconductor CeRhSi<sub>3</sub>”  
14:15 – 14:55 A. Kaminski (Iowa State U.) “High temperature superconductivity  
- insights from Angle Resolved Photoemission Spectroscopy”  
14:55 – 15:20 H. Matsui (Tohoku U.) “Recent photoemission results for the electron-doped high-temperature  
superconductors”  
15:20 – 15:40 Break

(Chair: K. Iwasa)

- 15:40 – 16:20 D. Mannix (ESRF) “Phase IV in Ce<sub>0.7</sub>La<sub>0.3</sub>B<sub>6</sub>: Resonant X-ray Scattering Results”  
16:20 – 16:45 H. Kusunose (Tohoku U.) “Multipole physics in orbitally degenerate systems”

- 16:45 – 17:10 T. Nagao (Gunma U.) “Spectral analysis of resonant x-ray scattering from the multipolar ordering phase”
- 17:20 – 17:30 Conference Photograph
- 18:00 – Conference Banquet at Restaurant in Sendai International Center

**June 30 (Fri)**

Morning session (Chair: TBA)

- 09:40 – 10:10 T. Mitsui (Tohoku U.) “Review of Solar- and Geo-neutrinos”
- 10:10 – 10:35 I. Shimizu (Tohoku U.) “Neutrinos from the Sun: Observation”
- 10:35 – 11:00 S. Enomoto (Tohoku U.) “Neutrinos from the Earth: Observation”
- 11:00 – 11:20 Break

(Chair: S. Nakamura)

- 11:20 – 12:00 H. Gao (Duke U.) “The structure of the nucleon from electromagnetic microscope”
- 12:00 – 12:25 T. Koike (Tohoku U.) “Gamma-ray spectroscopy with Hyperball2”
- 12:25 – 13:50 Lunch

Afternoon session (Chair: N. Takigawa)

- 13:50 – 14:30 T. Teranishi (Kyusyu U.) “Study of Resonance States in Unstable Nuclei Using Low-energy Radioactive Nuclear Beams”
- 14:30 – 15:10 Ph. Chomaz (GANIL) “Phase transition in finite systems”
- 15:10 – 15:35 A. Ono (Tohoku U.) “Nuclear liquid-gas phase transition in a molecular dynamics approach”
- 15:35 – 15:45 O. Hasimoto (Dean, School of Natural Science, Tohoku U.) Closing address