

Nagataki Shigehiro

Research interest:

- Central engine of gamma-ray bursts and formation of relativistic jet.
- Theory of gamma-ray burst emission and afterglows.
- High energy gamma-rays and neutrinos from compact objects.
- Origin of ultra-high energy cosmic rays and their propagation.
- Explosive nucleosynthesis in core-collapse supernovae and gamma-ray bursts.
- Particle acceleration mechanism in relativistic shocks.
- Broad research directions in other fields of astrophysics (cosmology, brane-world, etc.).



Research Activities & achievements:

Publications: 109, including: 62 in refereed journals, 4 submitted to refereed journals; 43 in Conference papers.

Invited Talks (International Only):

- "Gamma-Ray Burst Physics", XIV Mexican School on Particles and Fields, Morelia, Mexico, November 4-12 (2010).
- "Ultra-High Energy Cosmic Rays and Neutrinos", XIV Mexican School on Particles and Fields, Morelia, Mexico, November 4-12 (2010).
- "Nonlinear Relativistic Jet Formation and Gamma-Ray bursts", Frontiers of Nonlinear Physics physics IV, Nizhny Novgorod, Russia, July 13-20 (2010).
- "Numerical High-Energy Astrophysics", Workshop on Circumstellar Interactions in Massive Binaries, Hokkaido, Japan March 17-18 (2010).
- "Ultra-High Energy Cosmic Rays and Neutrinos", XIV Mexican School on Particles and Fields, Morelia, Mexico, November 4-12 (2010).
- "Nonlinear Relativistic Jet Formation and Gamma-Ray bursts", Frontiers of Nonlinear Physics physics IV, Nizhny Novgorod, Russia, July 13-20 (2010).
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- "Nonlinear Relativistic Jet Formation and Gamma-Ray bursts", Frontiers of Nonlinear Physics physics IV, Nizhny Novgorod, Russia, July 13-20 (2010).
- "Numerical High-Energy Astrophysics", Workshop on Circumstellar Interactions in Massive Binaries, Hokkaido, Japan March 17-18 (2010).

2010 List of Publications

1. D. A. Prokhorov, Y. Dubois, **S. Nagataki**
'An analysis of the temperature structure of galaxy clusters by means of the thermal Sunyaev-Zel'dovich effect' Astronomy and Astrophysics, accepted (arXiv:1009.3305)
2. A. Calvez, A. Kusenko, **S. Nagataki**
'The role of Galactic sources and magnetic fields in forming the observed energy-dependent composition of ultrahigh-energy cosmic rays' Physical Review Letters 105 (2010) 091101
3. J. Aoi, K. Murase, K. Takahashi, K. Ioka, **S. Nagataki**
'Can we probe the Lorentz factor of gamma-ray bursts from GeV-TeV spectra integrated over internal shocks?' The Astrophysical Journal, 722 440-451 (2010).
4. Y. Masada, **S. Nagataki**, K. Shibata, T. Terasawa
'Solar-type Theoretical Model for Magnetar Giant Flare'

Publication of Astronomical Society of Japan, 62 1093-1102 (2010)

5. K. Murase, K. Toma, R. Yamazaki, **S. Nagataki**, K. Ioka

'High-Energy Emission as a Test of the Prior Emission Model for Gamma-Ray Burst Afterglows' Monthly
Nortice of the Royal Astronomical Society 402 L54-L58 (2010).

Papers submitted to refereed journals:

1. **S. Nagataki**

"Rotating BHs as Central Engines of Long GRBs: Faster is Better"

Publications of the Astronomical Society of Japan, submitted.

2. A. Mizuta, **S. Nagataki**, J. Aoi

'Thermal Radiation from GRB Jets' The Astrophysical Journal Letters, submitted (arXiv:1006.2440).

3. X. Cui, J. Aoi, **S. Nagataki**

'Origins of Short Gamma-Ray Bursts Deduced from Offsets to Their Host Galaxies Revisited',

Publication of Astronomical Society of Japan, submitted (arXiv:1004.2302).