

# Origin of $\gamma$ -ray bursts, magnetars and UHE cosmic rays

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# 2002 Fiscal Year Final Research Report Summary

## Origin of $\gamma$ -ray bursts, magnetars and UHE cosmic rays

Research Project

### Project/Area Number

12640302

### Research Category

Grant-in-Aid for Scientific Research (C)

### Allocation Type

Single-year Grants

### Section

一般

### Research Field

素粒子・核・宇宙線

### Research Institution

Kana Eawa University (2002)

宇宙科学研究所 (2000-2001)

### Principal Investigator

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### Co-Investigator(Kenkyū-buntansha)

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### Project Period (FY)

2000 – 2002

### Keywords

$\gamma$ -ray bursts / magnetar / OHE cosmic rays

### Research Abstract

We have targeted the three topics in this project, which are Gamma-Ray Bursts (GRBs), Magnetars and Ultra High Energy (UHE) cosmic-rays. In GRBs, we studied the iron feature in the X-ray afterglow spectrum. This feature might be a best key to solve the origin of GRBs. If exist, GRBs should be from the evolved environment which is a star forming region. There was a serious discrepancy in the iron line energy and the redshift for the case of GRB 970828 which was observed with ASCA. We solved this discrepancy as the result of the non-equilibrium ionization plasma. If so, the GRB is very far and from the evolved environment, which is consistent with other GRBs. Concerning Magnetars, we have observed SGR1900-00 and discovered a pulsar component following the our discovery of SGR 1806-20. This was the 2nd discovery of our group. Then we have searched the 3rd one but failed. In any case, the reality of the super-strong magnetic field and neutron star are established through these observations.

# Research Products (13 results)

All	2003	2001	2000	1999
All	Journal Article			

- [Journal Article] The Quiescent counterpart of the soft repeater SGR 0526-66 **2003** ▾
- [Journal Article] X-ray and Gamma-ray emission from PSR 1259-63/Be star **2003** ▾
- [Journal Article] Early universe with GRBs **2003** ▾
- [Journal Article] マグネター:磁気星 **2003** ▾
- [Journal Article] The Quiescent counterpart of the soft repeater SGR 0526-66 **2003** ▾
- [Journal Article] X-ray and gamma-ray emission from PSR1259-63/Be-star **2003** ▾
- [Journal Article] Analytical studies of the Structure and Emission of the SS433 Jets **2001** ▾
- [Journal Article] Vortex Configurations, Oscillations and Pinning in Neutron star clust **2001** ▾
- [Journal Article] Analytical studies of the structure and emission of the SS433 Jet **2001** ▾
- [Journal Article] Vortex configuration, oscillation and pinning in neutron star crust **2001** ▾
- [Journal Article] A possible emission feature in an X-ray afterglow of GRB970828 as a radiative recombination edge **2001** ▾
- [Journal Article] Observation of X-ray lines from GRB991216 **2000** ▾
- [Journal Article] ASCA discovery of an X-ray pulsar in the error box of SGR 1900+14 **1999** ▾

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