

## Vereshchagin Gregory

Position: researcher  
Period covered: 2010



### I. Scientific Work

The research was focused on kinetic and hydrodynamic approach to electron-positron plasma, generalization of the computation scheme and consequently:

- determination of thermalization timescales for wide range of plasma parameters;
- accounting for degeneracy of the pair plasma;
- determination of spatial profiles of expanding optically thick pair plasma with baryonic loading for various initial and boundary conditions;
- approach to transparency of expanding optically thick pair plasma.

### II. Conferences and educational activities

#### II a. Conferences and Other External Scientific Works

- Korean Physical Society 2010 Fall Meeting, Pyeong-chang, Korea, 20-22 October, 2010.
- GRB 2010 / Dall'eV al TeV tutti i colori dei GRB, Secondo Congresso Italiano sui Gamma-ray Burst, Cefalù 15-18 Giugno 2010.

#### II b. Diploma thesis supervision

- Gustavo de Barros,
- Ivan Siutsou,
- Alberto Benedetti

#### II c. Other Teaching Duties

“Relativistic kinetic theory and its applications in astrophysics and cosmology”: Lecture course for International Relativistic Astrophysics PhD, Erasmus Mundus Joint Doctorate Program from the European Commission. September 6-24, 2010, University of Nice Sophia Antipolis, Nice, France.

### III. Service activities

#### III a. Within ICRANet

Official visit to the Republic of Armenia 26.06.10-03.07.10 with Director of ICRANet

#### III b. Outside ICRANet

Supervision of the course work of undergraduate student of the Belorussian State University Ivan Rybak, title of the work “The problem of the cosmological constant”

### 2010 List of Publications

A.G. Aksenov, R. Ruffini and G.V. Vereshchagin, “Pair plasma relaxation time scales”, Physical Review E, Vol. 81 (2010) 046401.

R. Ruffini, G.V. Vereshchagin and S.-S. Xue, “Electron-positron pairs in physics and astrophysics: from heavy nuclei to black holes” Physics Reports, Vol. 487 (2010) No 1-4, pp. 1-140.