

Xue She-Sheng

Position: ICRANet Faculty

Period covered: 2014-2015



I Scientific Work

Strong and pulsating electromagnetic field in gravitational collapse and heavy atoms, as well as its relevance to Gamma-Ray Bursts (GRBs) and heavy atom physics.

Strong electromagnetic field in compact stars and heavy atoms and its relevance to their structure and properties.

Pair production rates and radiation in strong and time-varying electromagnetic fields, and its applications in physics and astrophysics.

Pair production and interactions of fields and matter in the cosmological evolution within the framework of Einstein-Maxwell theory.

Four-fermion interactions of Einstein-Cartan theory and its resulted particle spectra for matter and dark matter.

The opacity of high energy cosmic particles in terms of their energy and travelling distance.

See the following list of publications.

II Conferences and educational activities

II a Conferences and Other External Scientific Work

Participating organization of ICRANet meetings in Korea and China: the 14th Italian-Korean meeting (July, 2015, Pescara, Korea) and 4th Galileo –Xu Guangqi meeting (GX4, May 1st, 2015) and their proceedings.

Participating organization of MG14 Rome, July 2015, and acting as a chair of the parallel section.

The first Scientific ICRANet Meeting in Armenia, 30 June - 4 July 2014 – Yerevan (Armenia)
IZEST-ELI-NP Meeting (Extreme Light's New Horizons Introducing Zepto and Zettawatt Science Societal Applications), Sept.~ 17-19, 2014, Paris, France.

II b Work With Students

Wang Yu, Li Liang , XiaoFeng Yang, and Iranian students, Rahim Moradi, Seddigheh Tizchang and Saghar Batebi

II c Diploma thesis supervision

Yuanbin Wu, Handrik Ludwig, Eckhard Strobel, and Clement Stahl.

II d Other Teaching Duties

Teaching courses in Nice and Les Houches schools for IRAP Ph.D. Erasmus Mundus students.

II e. Work With Postdocs

Ivan, Siutsou, Carlos Argulles, Christine Gruber, Rohoollah Mohammadi, and Ehsan Bavarsad.

III. Service activities [*activities carried out in collaboration with ICRANet (e.g. teaching activities, conferences etc...) and outside ICRANet (teaching activities in your university etc...)*]

III a. Within ICRANet

Participating organization of ICRANet Seminars.

Participating preparation of ICRANet Newsletter and ICRANet news for Hyperspce news.

III b. Outside ICRANet

IV. Other

2015 List of Publication

L. Hendrik, R. Ruffini, and S.-S. Xue, "Collective electronic pulsation of compressed atoms in Thomas-Fermi model", Nuclear Physics A 941 (2015) 1–15.

E. Strobel and S.-S. Xue, "Semiclassical pair production rate for rotating electric fields", Phys. Rev. D 91, 045016 2015.

S.-S. Xue, "How universe evolves with cosmological and gravitational constants in the field theory of Einstein–Cartan gravity", Nuclear Physics B897 (2015) 326–345.

H. Kleinert and S.-S. Xue, "Critical fermion density for restoring spontaneously broken symmetry", Mod. Phys. Lett. A, Vol. 30, No. 24 (2015) 1550122

S.-S. Xue, "Resonant and nonresonant phenomena of four-fermion operators in Einstein-Cartan theory" Physics Letters B 744 (2015) 88–94

J. Rueda, R. Ruffini, Y.-B. Wu and S.-S. Xue, "Surface tension for heavy atoms", submitted to Phys. Rev. C.

R. Ruffini, G. Vereshchagin and S.-S. Xue, "Cosmic absorption of ultra high energy particles" to appear in Astrophysics and Space Science.