

Biographical Sketches

Valbona Kunkel

Education

PhD, Computational Science and Astrophysics, George Mason University (2012)

M.S. Computational Science, George Mason University (2009)

Diploma Physic, University of Tirana, Albania (1990)

Research Area

Research interests cover two main areas:

(1) The science and physical mechanisms associated with solar flares and coronal mass ejections (CMEs), the two most energetic phenomena that occur on the Sun. These events affect the environment throughout the solar system, including the space near the Earth.

(2) The development of a practical web-based application that will provide accurate predictions of space weather. This involves the development of a robust model to characterize the propagation of the mass and energy associated with these impulsive solar events throughout the integrated Sun- Earth system.

A main focus of this research relies on identifying the physical quantities on the Sun that can affect the magnitude and orientation of the magnetic field at 1AU. Results of these research areas will help space weather service providers and users of space weather services to better anticipate the intensity and duration of upcoming geomagnetic storms. In addition, these efforts would address societal needs of mitigation of adverse space weather effects on human space exploration as well as space-based communication, navigation and satellite operation.

Selected Publications

Kunkel, V., Rouillard, A., Chen, J. A New Asymmetric Flux Rope Model of CME, ApJ, In Preparation, 2016

Kunkel, V., Rouillard, A. Dependence of CME Ejecta Magnetic Field at 1 AU on Solar Quantities, ApJ, In Preparation, 2016

Rouillard, A., Kunkel, V. Validation of HelioXM model, ApJ, In Preparation, 2016

Olmedo, O., Zhang, J., & Kunkel, V. Lorentz Self-Force of an Ellipse Current Loop Model, ApJ, 2013

V. Kunkel, J. Chen, 2010, Dynamics of CMEs and Evolution of CME Magnetic Fields in Interplanetary Space. Astrophys. 2010

J. Chen, V.Kunkel, 2010, Temporal and Physical Connection Between CMEs and Flares. Astrophys.

Plunkett, S. P.; Newmark, J. S.; Kunkel, V.; Patsourakos, S.; McMullin, D. R.; Hill, S. M. 2008, Comparison of Algorithms for Near Real-Time Flare Location with Solar Truth. NOAA pub.

J. S. Morrill, V Kunkel, R. A.Howard, 2007, Kinematics of CMEs observed by LASCO and SECCHI, Sol. Phys.