

**Topic:** Understand how Flares Accelerate Particles near the Sun (i.e., through Shocks and/or Reconnection) and how they Contribute to Large SEP Events

**Project Title:**

3D MHD Modeling of Flare Reconnection for Solar Energetic Particle Acceleration

**PI Name:** Judy Karpen

**PI Email:** Judy.Karpen@nasa.gov

**Affiliation:** Naval Research Laboratory

**CO-I(s):**

- Spiro K Antiochos (Naval Research Laboratory)
- Benjamin J Lynch ( University of California-Berkeley)

**Collaborator(s):**

- MacNeice, Peter (Drexel University)

**Project Information:**

Objective: to determine the connectivity changes, observable signatures, and energy budget of flare reconnection driven by a self-consistent solar eruption. Results can be used as input for particle acceleration models and compared with SEP and radio observations.

Methods: numerical simulations with ARMS, our massively parallel 3D MHD code with adaptive mesh refinement. Postprocessing with Heliospace and other software to determine field topology and predict observable signatures.

Significance: understanding the 3D reconnection process through modeling driven in a self-consistent and realistic manner is an essential component of a team approach to solving the flare particle acceleration problem.

**ROSES ID:** NNH06ZDA001N

**Duration:**

**Selection Year:** 2007

**Program Element:** Focused Science Topic

---

**Citations:**

**Summary:** no summary

**Citation:** Karpen, J. T.; Antiochos, S. K.; DeVore, C. R.; Linton, M. G.; (2010), A Numerical Investigation of Unsheared Flux Cancellation, Magnetic Coupling between the Interior and Atmosphere of the Sun, edited by S.S. Hasan and R.J. Rutten; Astrophysics and Space Science Proceedings. ISSN 1570-6591 (Print) 1570-6605 (Online) Published by Springer Berlin Heidelberg; ISBN 978-3-642-02858-8 (Print) 978-3-642-02859-5 (Online), pp.518-519, doi: 10.1007/978-3-642-02859-5\_79

---