

2-5 Marzo 2009

Scheda Partecipante

Nome e Cognome: Fatima Rubio da Costa

Laurea conseguita il: July 2007

Titolo Tesi: [Near-infrared sky background fluctuations at mid- and low latitudes](#)

Relatori: Guy Moreels & Jacques Clairemidi

Titolo di Dottore di Ricerca conseguito nell'anno:

Titolo Tesi: Flare electron beams: modeling propagation and resulting radiation, and comparison with EUV and X-ray observations

Tutors: F. Zuccarello, L. Fletcher

Esperienze ulteriori:

Posizione attuale: PhD student at the University of Catania

Breve descrizione attività di ricerca (max 20 righe):

Solar explosive events release energy in various forms, e. g. a solar flare is a sudden chromospheric eruption of gas that occurs when magnetic energy that has built up in the solar atmosphere is suddenly released. Usually it is associated with active regions, around sunspots and it emits radiation across the electromagnetic spectrum at all wavelengths, from radio waves at the long wavelength end, through optical emission to X-rays and γ -rays at the short wavelength end.

As the magnetic energy is being released, particles, including e^- , p^+ , and heavy nuclei, are heated and accelerated in the solar atmosphere.

Our aim is to understand the physics involved in a solar flare and model the resulting radiation and the particles accelerated during the processes in different wavelength.

Titolo ed Abstract del contributo alla Student's week 2009 (max 10 righe):

Study of the Lyman alpha emission during a solar flare

The TRACE satellite observed a small number of solar flares in the Lyman alpha channel, which have until now not been analyzed. We look at a well-observed flare in 8th September 1999 to investigate different topics: we studied spatial and temporal evolution of the flare and associated filament eruption in Lyman alpha; hard X-ray and soft X-ray emission has been analyzed using some HXT/Yohkoh and SXT/Yohkoh data; we have examined the flare energetics using the hard X-rays (in the collisional thick target approximation) to estimate the energy flux carried by electrons; using TRACE 1216A/1600A channels it is possible to estimate the radiative power in UV; running a code that solves iteratively the statistical equilibrium and radiative transfer equations, taking into account the temperature at each layer, the height of the layer (in terms of mass) and the microturbulent velocity, we are studying the variation of the intensity and the shape

of different Hydrogen emission lines (in particular the Lyman alpha line emission) in different layers of the Sun.

Elenco Pubblicazioni:

G. Moreels, J. Clairemidi, M. Faivre, D. Pautet, **F. Rubio da Costa**, P. Rousselot, J.W. Meriwether, G.A. Lehmacher, E. Vidal, J.L. Chau & G. Monnet. Near-infrared sky background fluctuations at mid- and low latitudes. *Experimental Astronomy*. 22, 87-107 (2008).

P. Romano, F. Zuccarello, L. Fletcher, **F. Rubio da Costa**, H. M. Bain & L. Contarino. Evolution of an eruptive flare loop system. *A&A*. Submitted

F. Rubio da Costa, L. Fletcher, N. Labrosse & F. Zuccarello. Observations of a solar flare and filament eruption in Lyman-alpha and X-rays. In prep.