

# Investigating the evolution of the magnetic field during a X-class flare using the spatially-coupled STiC

D. Arramy and J. de la Cruz Rodriguez . A. Pastor Yabar

Institute for Solar Physics, Dept. of Astronomy, Stockholm University, AlbaNova University Centre, 106 91 Stockholm, Sweden

contact e-mail: *dimitri.aramy@astro.su.se*

Active regions can store magnetic energy over large structures in form of magnetic twist. Eventually, the magnetic configuration becomes unstable and the field reconnects to a lower energy configuration, closer to a potential field, releasing the energy excess in the form of heat, radiation and kinetic energy. In this study, we perform inversions of a time series of an X-class flare observed in the Fe I 6173 and Ca II 8542 Å lines. We study the spatial distribution and time evolution of magnetic fields in the photosphere and chromosphere during the reconnection process and their relation with other physical parameters from the model. This study is also new in that it employs a spatially-coupled NLTE inversion method (spatially-coupled STiC) to derive the model atmosphere.