

## Homologous Solar Flares in Shear-increasing Magnetic Arcade Systems

Gwang-Son Choe

School of Engineering

Tongmyong University of Information Technology

535 Yongdangdong, Namgu, Pusan 608-080, Korea

Phone: 051-629-7219

Fax: 051-629-7249

E-mail: gchoe@tmic.tit.ac.kr

In magnetic arcades subject to continuous shear-increasing footpoint motions, successive generation of magnetic islands and their interactive evolution are studied by numerical MHD simulations. As is well known, a helical magnetic field (a magnetic island having a toroidal field) can be created by magnetic reconnection in a sheared magnetic arcade. However, an island so generated cannot rise very far if the ambient line-tied field is strong enough. A continuing shear-increase can create another island and this new island merges with the preceding island very quickly to form a bigger island, which rises faster than its predecessor. As this process being repeated, several impulsive events of magnetic energy release take place and the growing magnetic island is driven away from the sun. Different types of shear-increasing motions produce different Poynting flux distributions and the time interval between flaring events is accordingly varied. Our study also confirms that there is a critical value of shear for island formation in an arcade-like field configuration.