ON EXPANSION OF MAGNETIC CLOUDS

M. Vandas[1], A. Geranios[2], and E. P. Romashets[3,4]

[1]*Astronomical Institute, Academy of Sciences, Boční II 1401,
14131 Praha 4, Czech Republic,* [2]*Physics Department, University of
Athens, Panepistimioupoli-Kouponia, Athens 15771, Greece,* [3]*Solar
Observatory, Prairie View A&M University, Prairie View, TX, 77446,
USA,* [4]*Institute of Terrestrial Magnetism, Ionosphere, and Radio Wave
Propagation, Russian Academy of Sciences, Troitsk, Moscow Region,
142190, Russia*

Magnetic clouds are large interplanetary flux ropes propagating in the
solar wind. Due to enhanced inner magnetic pressure, they expand during
their travel. We present a model of an expanding elliptic cylindrical force-
free flux rope and compare it with observations. The model uses measure-
ments of magnetic field components and velocity magnitudes to search for
flux-rope geometric parameters and its expansion velocity. Separate velocity
components are not used in the fitting procedure but they are subsequently
compared to model ones for a more strict test of our model.