PDF versions of previous colloquia and more information can be found in “events” at http://gcosmo.bao.ac.cn/

国台学术报告 NAOC COLLOQUIUM

2012 年 第 65 次 / Number 65, 2012

TIME: Monday, 3:00 PM, Nov. 19, 2012 LOCATION: A601 NAOC

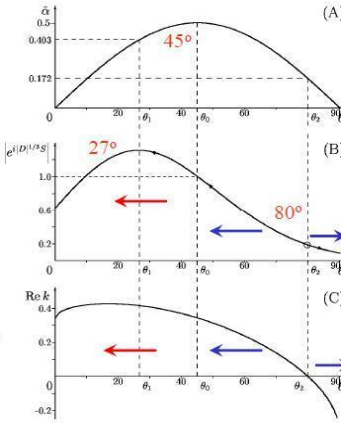
Asymptotic solutions for dynamo waves and polar activity in the solar cycle

Kirill Kuzanyan (IZMIRAN, Visiting Professor at NAOC)

Dr. Kirill Kuzanyan, mathematical physicist and astrophysicist, graduated from Physics department, Moscow University in 1990, awarded thereafter PhD in 1995 at Moscow, habilitation (DSc) in 2005 at Russian Academy of Sciences. He worked for Universities of Exeter and Leeds (UK), Catania University (Italy) and University of Potsdam (Germany), as well as National Astronomical Observatory of Japan. Since 1997 he joined Institute for Terrestrial Magnetism, Ionosphere and Radio-wave Propagation (IZMIRAN) of Russian Academy of Sciences, and during some time in 1998, 2001, 2002, 2004-2009, and since 2010 until present he regularly stays at National Astronomical Observatories (CAS) in Beijing as a Visiting Professor where he has developed long and productive collaboration in interpretation of helical properties of observable solar magnetic fields. He has published more than 42 refereed journal papers and contributed at more than 37 international meetings, workshops and conferences. Since 1994 he is a member of Euro-Asian Astronomical Society.

Abstract

This is a review talk on the direction of studies of the solar dynamo by mean of simple linear and weakly non-linear models which allow us to construct asymptotic WKB solutions. This method is analogous to semi-classical approach in quantum mechanics; it uses advantage of the short wave (small parameter) solution related to strong generation sources (the large magnetic Reynolds numbers). The solutions enable us to identify the properties of the solar dynamo:



1) Magnetic field generation maximum is shifted from mid-latitudes towards the equator
2) Polar dynamo wave is robust and can be compared with available observations of polar faculae etc.

I discuss observational implementations of the polar dynamo wave and the ways of its possible detection with the presently available and forthcoming data.

All are welcome! Tea, coffee, biscuits will be served at 2:45 P.M.