Abstract Submitted
for the APR07 Meeting of
The American Physical Society

Distribution of Cosmic Rays in the Galaxy – a Link to Biodiversity Cycles MIKHAIL MEDVEDEV, University of Kansas — The spectral analysis of fluctuations of biodiversity (Rohde & Muller, 2005) and the subsequent re-analysis of the diversity record, species origination and extinction rates, gene duplication, etc (Melott & Liebermann, 2007) indicate the presence of a 62±3My cyclicity, for the last 500My. Medvedev & Melott (2006) proposed that the cyclicity may be related to the periodicity of the Solar motion with respect to the Galactic plane, which exhibits a 63My oscillation, and the inhomogeneous distribution of Cosmic Rays (CR) throughout the Milky Way, which may affect the biosphere by changing mutation rate, climate, food chain, etc. Here we present a model of CR propagation in the Galactic magnetic fields, in the presence of both the mean field gradient and the strong MHD turbulence in the interstellar medium. We explore the "magnetic shielding effect" as a function of CR energy and composition and estimate the resultant flux of mutagenic secondary muons at the Earth surface.

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Date submitted: 16 Jan 2007 Electronic form version 1.4