

ANALYSIS OF GALACTIC CHEMICAL EVOLUTION
MODEL COMPATIBLE WITH MEASUREMENTS OF
INTERSTELLAR DEUTERIUM ABUNDANCE

P. KOSTIĆ

*Department Of Physics, Faculty Of Science, University Of Novi
Sad, Trg Dositeja Obradovića 3, 21000 Novi Sad, Serbia
E-mail perakostic@gmail.com*

Abstract. Measurements of interstellar deuterium abundances (D/H) (Copernicus, HST, IMAPS, FUSE) have shown significant variations along different lines of sight. There is correlation between these variations and rates of dust depletion of refractory elements (Fe, Mg, Si), suggesting that differences in D/H are due to deuterium depletion on dust. Relatively high deuterium abundance ($\sim 70 - 80\%$ of primordial), according to its destruction in nuclear reactions in stars, is understood as a consequence of constant infall of deuterium rich and low-metallicity gas from the Galactic halo. Furthermore, measurements of gas fraction in baryonic mass of the Galactic disk show that only $7 - 30\%$ of mass of the disk is in gas. The latest estimates of average D/H abundance in the Galactic disk and primordial D abundance, (used in this paper), together with gas fraction measurements, lead to determination of infall rate as a fraction of star formation rate in simple galactic chemical evolution models. Also, it was determined that return fraction of (deuterium free) gas is $\sim 42\%$ of initial stellar masses.

Presentation link: <http://belissima.aob.rs/Conf2012/Kostic.12.pdf>

