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Abundance ratios in stars vs. hot gas in elliptical galaxies

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Abstract. I present predictions from a chemical evolution model for a self-consistent study of optical (i.e., stellar) and X-ray (i.e., gas) properties of present-day elliptical galaxies. Detailed cooling and heating processes in the interstellar medium are taken into account and allow a reliable modelling of the SN-driven galactic wind. The model simultaneously reproduces the mass-metallicity, colour-magnitude, L_X - L_B and L_X - T relations, and the observed trend of [Mg/Fe] with σ. The "iron discrepancy" can be solved by taking into account the dust presence.

Keywords. galaxies: elliptical and lenticular, cD - galaxies: abundances - X-rays: ISM

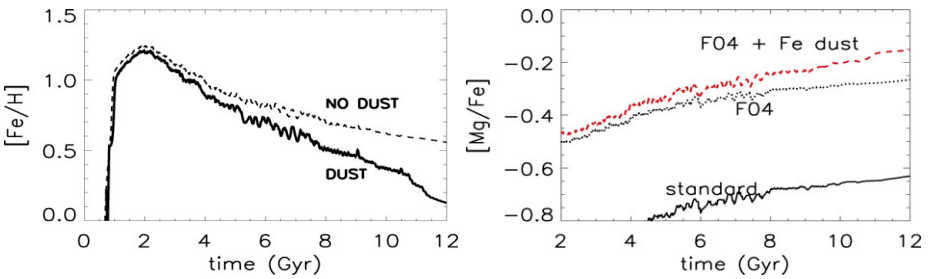

Figure 1. Predicted abundance ratios as a function of time by different models (see text).

Monolithic collapse models featuring a SN-driven galactic wind (Pipino *et al.* 2008) are shown to reproduce the largest number of observables in the optical spectrum of elliptical galaxies (e.g. Pipino *et al.* 2005, P05). Here, I made use of the P05 chemical evolution code in order to present preliminary attempts to overcome long lasting problems such as the discrepancy between the expected high Fe abundance in the post-wind phase and the observed one, as well as to explain the observed abundance ratio pattern (see Bregman, Humphrey, this Conference).

In particular, in Calura *et al.* (2008) we showed that the most recent estimates of the diffuse dust in ellipticals is enough to hide a suitable amount of Fe and reduce the gas phase abundance to the required solar value (Fig. 1, left panel). The empirical yields by François *et al.* (2004), instead, may make the predicted [Mg/Fe] closer to the observed solar value (Fig. 1, right panel). The same yields may explain why the observations hint to an under-solar [O/Mg] ratio.

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