The chemistry of interstellar dust at high resolution with Athena

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Abstract

I present the prospects of future instruments, in particular Athena, of observing and studying extinction by diffuse interstellar dust (ID) in the X-ray band. The X-rays have unique advantages which makes these studies fundamental to acquire a complete picture on the ID chemistry. For example sharp and deep absorption features of Mg, Si, O and Fe, which are the building blocks of silicates, fall in the X-ray band. Athena will be able to access with unprecedented sensitivity and resolution the iron K edge at 7.1 keV and will be able to study lower abundance elements, like Al, Ca and S, unveiling the chemistry of dense and so far unexplored dense environments in the Galaxy (Costantini et al. 2019, Rogantini et al. 2018).

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