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Comets characterization with MAVIS

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Comets are among the most pristine objects of the Solar System that retain information of the primordial material present in the early phases of the Solar System formation.

Spectroscopic investigation of emissions, which develop when heated by solar irradiation, is diagnostic of their surface composition, and reveals hints of the region where these comets formed. Important features due to chemical species and ions, like for example CN, C 2 , C 3 , N 2 + , CO + , can be identified in comets, when they are approaching the inner Solar System. In particular, N 2 + and CO + are sensitive to formation temperature of comets, and hence directly linked to the region in the Solar System when these comets formed.

In this work, we explore the possibility of detecting the above listed emission lines, in the MAVIS spectral range, taking advantage of the performances and spectral coverage of the low resolution channels, that are suitable to this scientific purpose.

The expected observations would be complementary to the future observations with the ESA Comet Interceptor, selected among the F-class missions, and currently scheduled for launch in 2029.

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