



## **Properties and temperature determination of the icy surface of the TNO 136108 (2003 EL<sub>61</sub>)**

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Spectroscopic observations of trans-Neptunian objects (TNOs) have revealed the presence of several kinds of ices on the surface of these objects (methane, water ice, nitrogen, methanol...). Beyond ices detection, the accuracy of spectroscopic data of the brightest objects gives constraints about the surface properties, as for example on physical state (amorphous or crystalline), mixture state (pure or diluted) of the ices and temperature.

We observe one of the largest and brightest TNOs, the object 136108 (2003 EL<sub>61</sub>), to determine its surface composition and constrain its surface properties. We use visible and near infrared spectroscopy, using (respectively) EMMI (La Silla-ESO) and the new 3D spectrograph SINFONI (VLT-ESO), to investigate the surface composition. We run radiative transfer model, based on Hapke theory, to better analyse the surface characteristics of this TNO. The observations reveal a surface essentially composed of water ice, in a crystalline state, which confirm Trujillo et al. (2006) observations, mixed probably also to water ice in an amorphous state. We also discuss on the possibility to determine the surface temperature of the object, which results, according to our analyses, close to 20K.