



High resolution monitoring of 9P/Tempel 1 during the flyby of DEEP IMPACT

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On July 4, 2005 the NASA spacecraft Deep Impact delivered an impactor on the comet 9P/Tempel 1, to study the material underneath the surface of the nucleus. A world-wide observation campaign accompanied the mission, to characterize the activity of Tempel 1 before and after the impact. At La Palma (Canary Islands), the comet was observed from July 2 to July 9 using the echelle spectrograph SARG on the Telescopio Nazionale Galileo (TNG). 15 spectra have been obtained in the spectral range 4620-7920 Å, with a resolving power $R=29000$. The emission lines visible in the spectra have been catalogued and identified, using as a comparison list the catalogue obtained from a spectrum of 153P/2002 Ikeya-Zhang, taken on April 20, 2002 [1]. Most of the lines found in the spectra can be attributed to C2, NH₂ and CN; there are also unidentified lines, that we are listing and comparing with those found in other comets observed by us. The green line at 5577 Å and the red doublet at 6300 and 6364 Å are detectable in many spectra; when possible, the oxygen lines ratio has been computed and compared with the model results obtained from a coupled chemistry transport model [2,3]. All the results point to water as the main parent of oxygen lines.

References: [1] Cremonese G. et al. (2006) *A&A* 461, 789. [2] Bhardwaj A. (1999) *J. Geophys. Res.* 124, 1929. [3] Capria M.T. et al. (2007) submitted to *A&A*