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Visible-Infrared spectral characterization of 3200 Phaethon at its closest approach to Earth

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The asteroid 3200 Phaethon is a peculiar object with a very eccentric orbit with a perihelion located at only 0.14 AU and it has been dynamically associated with the Geminid meteor stream (Gustafson 1989; Williams & Wu 1993; Jenniskens 2006, and references therein). Phaethon is a B-class asteroid and it is linked with carbonaceous species and hydrated silicates such as phyllosilicates. Good matches of the Phaethon spectra are the aqueously altered CI/CM meteorites (Licandro, 2007) and the CK meteorites (Clark et al. 2010). The asteroid 3200 Phaethon is the target of the *Destiny +* Space mission, managed by Japanese Space Agency (Jaxa), which will perform a close rendezvous with this asteroid, with the scientific objectives of studying its surface properties and assessing its cometary activity in terms of release of dust and volatiles. The December 2017 Phaethon Earth approach has been a very important event since it was about 10 times closer than any other future approach predicted at least for the next 20 years. In that occasion, we observed the asteroid at the 3.5 m Telescopio Nazionale Galileo in the spectral interval (0.4-2.5 μm). We obtained three spectra in the Visible from 0.4 to 0.8 μm , with a strong fringing longward of 0.8 μm which doesn't allow to use the data between 0.8 and 1 μm . The spectra are featureless, however, the slope of two spectra agrees well with many previous observations of Phaethon (see e.g. Licandro et al, 2006). One spectrum shows, instead, a bluer behaviour, similarly to the unique previous observation by Luu and Jewitt (1993). The IR spectrum is almost featureless, with very weak features at the limit of the S/N which at present are under investigation.