

The infant bow shock: a new frontier at a weak activity comet

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The bow shock is the first boundary the solar wind encounters as it approaches planets or comets. The Rosetta spacecraft was able to observe the formation of a bow shock by following comet 67P/Churyumov-Gerasimenko toward the Sun, through perihelion, and back outward again. The spacecraft crossed the newly formed bow shock several times during two periods a few months before and after perihelion; it observed an increase in magnetic field magnitude and oscillation amplitude, electron and proton heating at the shock, and the diminution of the solar wind further downstream. Rosetta observed a cometary bow shock in its infancy, a stage in its development not previously accessible to in situ measurements at comets and planets.