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# The BepiColombo Serena/ELENA instrument: performances and testing

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The neutral sensor ELENA (Emitted Low-Energy Neutral Atoms) for the ESA cornerstone BepiColombo mission to Mercury (in the SERENA instrument package) is a new kind of low energetic neutral atoms instrument, mostly devoted to sputtering emission from planetary surfaces, from E $\sim$20 eV up to E$\sim$5 keV, within 1-D (4.5°x76°). ELENA is a Time of Flight instrument, based on the novel concept of ultra-sonic oscillating shutter as Start section and MCP detector with 32 discrete anodes as a direct Stop section. ELENA will monitor the emission of neutral atoms from the whole surface of Mercury allowing to investigate the interaction between the environment and the planet, the global particle loss-rate and the remote sensing of the surface properties. In particular, surface release processes are investigated by identifying particles release from the surface via solar wind-induced ion sputtering (<1eV - >100 eV) as well as Hydrogen back-scattered at hundreds eV.
The results of ELENA performance test, will be presented: the innovative Shutter system (Start section) operating at requested frequencies (around 43kHz), the ion rejection capability of double deflection system, the Stop detector, the electronic boards, the validation test.