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## SPACE THERE'S ALSO THE ITALIAN INSTRUMENTS LARRI ON MARS

On 26 November at 8:54 pm, the NASA lander Insight landed on Martian soil, taking a bit of Italy to the Red Planet. On board, in fact, there is LaRRI (Laser Retro-Reflector for Insight), a laser micro-reflector

developed by the INFN Frascati National Laboratories with the support of the Italian Space Agency (ASI). InSight (Interior exploration using Seismic Investigations, Geodesy and Heat Transport) is a mission that has the task of exploring the depths of Mars to understand how more than four billion years ago rocky planets, like the Earth, were formed. It was launched on 5 May last from the American base in Vandenberg (California) and will also measure the tectonic activity and the heat flow of the planet, as well as meteorite impacts. The Italian LaRRI instrument will provide the accurate position of the Insight lander during its exploration and will help to test Einstein's general relativity: it will be one of the first nodes of a future Martian network for geophysical and physical measurements, and will help to obtain a more accurate measurement of the 0 Meridian of Mars (a sort of "Mars Greenwich"). Designed by the SCF\_Lab group of the INFN Frascati National Laboratories, within the scope of research addressed to the Moon and Mars, in joint activities with ASI-Matera, LaRRI weighs 25 g, has a diameter and a height of 54 and 19 mm respectively, and consists of laser micro-reflectors made of a material suitable for the space environment. It is also a passive instrument that does not need maintenance and will work in space for many decades.

In 2020, two more micro-reflectors are planned to be launched towards the red planet: one on board Mars 2020, the new-generation NASA Rover (called LaRA, Laser Retroreflector Array) and another on the Russian Landing Platform of the ESA ExoMars 2020 Rover mission (called INRRI, Instrument for landing-Roving laser retroreflector Investigations).