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## Shedding light on the Milky Way with Gaia DR2

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Nowadays, our modeling of the Universe depends critically on our understanding of gravity; despite the fact General Relativity (GR) is the standard theory of gravity, deviations from GR could profoundly impact our conclusions on the best theory suitable to explain the “dark” ingredients that make up the Universe. On the other hand, experimental verifications of the GR weak effects are difficult, but could be as fundamental and complementary as any other observations that test manifestly the validity of Einstein’s field equations, which underpin strong gravity.

Gaia-like missions are offering the unique possibility of being a multi laboratory for extensively testing weak gravitational fields at local (Solar System) and more distant (Milky Way) scales.

In particular, the potential of Gaia is to probe the validity of GR by testing the structure of our Galaxy as a product of the cosmological evolution shaped by gravity (Local Cosmology), namely the relations among baryonic structures (and their evolution) and the dark components of the Universe.

In particular, we present the first attempt to apply the relativistic kinematics delivered by Gaia to trace the MW rotation curves within a general relativistic scenario.

### Summary

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