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Tracing a relativistic Milky Way within the RAMOD measurement protocol

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Advancement in astronomical observations and technical instrumentation implies taking into account the general relativistic effects due the dynamical gravitational fields encountered by the light while propagating from the star to the observer. Therefore, data exploitation for Gaia-like space astrometric mission (ESA, launch 2013) requires a fully relativistic interpretation of the inverse ray-tracing problem, namely the development of a highly accurate astrometric models, named RAMOD, in accordance with the geometrical environment affecting light propagation itself and the precepts of the theory of measurement. This could open a new rendition of the stellar distances and proper motions, or even an alternative detection perspective of many subtle relativistic effects suffered by light while it is propagating and subsequently reordered in the physical measurements.