

LOCAL MEASUREMENTS AND COSMOLOGICAL BACKGROUND (*)

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ABSTRACT. The relations between the local measurements achieved in the solar system for testing the metric theories of gravity and the cosmological background are far from being clear. In most cases, some heuristic assumptions are made in order to take into account cosmological boundary conditions. In particular, the light rays from distant stars or extragalactic objects are often believed on the basis of the so-called Mach principle to determine "fixed" directions defining inertial frames. However, it has been already shown in theoretical cosmology that in any anisotropic, inhomogeneous cosmological model, the apparent directions of a distant object varies with respect to locally non rotating inertial frames. Restricting in the first step our attention to some exact anisotropic models obeying to the Einstein equations, we study the order of magnitude of this effect in the context of observational devices such as the HIPPARCOS satellite, the Space Telescope and the gyroscope experiment planned at the Stanford University. Then we try to interpret the effect and more generally the various influences of cosmological terms, within the framework of the parametrized post-newtonian formalism.

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