

Rotational parallaxes of nearby galaxies

Andreas Brunthaler

Max-Planck-Institut für Radioastronomie, Auf dem Hügel 69, 53121 Bonn, Germany
email: brunthal@mpifr-bonn.mpg.de

Abstract. Accurate geometric distances, which are inherently free of systematic effects are of very great importance for an independent recalibration of extragalactic distance estimators. Local Group galaxies are close enough for both primary and secondary distance indicators to be readily isolated in ground- and space-based observations. Astrometric accuracies of a few micro-arcseconds based on Very Long Baseline Interferometry (VLBI) observations of water masers in high-mass star-forming regions in nearby galaxies allow a measurement of the proper motions of these masers. Since these high-mass star-forming regions rotate with the galaxies, one can deduce a rotational parallax by comparing the known rotation curve with the proper motions of the masers. I provide an update of our previous rotation parallax of M33 and show first results of observations of the recently discovered water masers in the Andromeda galaxy (M31).

Keywords. masers, astrometry, galaxies: distances and redshifts, galaxies: individual (M31, M33), galaxies: kinematics and dynamics, Local Group
