

KINEMATIC DISTANCES OF PLANETARY NEBULAE

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Most distances of planetary nebulae are known roughly within a factor of 2 or larger, except for some special objects for which the uncertainty can be as low as 50%. In the present work both IUE interstellar Lyman alpha profiles and 21 cm HI line surveys are used to infer the distances of four planetary nebulae.

From the measured Lyman alpha equivalent width the column density of neutral H can be determined. On the other hand, for a given 21 cm profile a LSR velocity can be obtained which corresponds to the same amount of gas as that producing the Lyman alpha absorption. Through the use of a galactic rotation curve the distance of the nebula can be estimated.

This procedure has been applied to the planetary nebulae NGC 7009, BD + 30°3639, NGC 7662 and IC 418, for which both Lyman alpha profiles and 21 cm observations were available. For these nebulae kinematic distances were obtained as well as plots of the H column density against distance. The results have been compared with distances obtained by different authors, in particular with extinction distances, which are generally considered as accurate. Finally, a discussion is included on the main sources of error on the derived distances.

This work was partly supported by CNPq and FAPESP - Brazil.

DISTANCE DETERMINATIONS FROM 21 cm INTERSTELLAR ABSORPTION-LINE MEASUREMENTS

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HI observations at 21 cm have been made with the Westerbork Synthesis Radio Telescope in the direction of six planetary nebulae located in or near the galactic plane (N 7027, 2440, 6537, 6572, 7026, 7354).