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One-dimensional HI synthesis observations of highly inclined galaxies.

The main incentive for this proposal comes from the frequent need to make optimum use of holes of several hours in the WSRT schedule, that for WHISP in particular. But, in our view, the observations proposed here also deserve to be done on their own merit.

In most galaxies, the limiting radius out to which HI has been detected is set by the sensitivity of the observation. Measuring the rotation curve 'as far out as possible' is therefore mainly a matter of observing time. For highly inclined galaxies one can determine the rotation curve from incomplete synthesis observations by placing the resolution axis parallel to the major axis of the galaxy on the sky. A high quality position-velocity map can then be obtained by observing the galaxy repeatedly, for a total of say 40 hours. Depending on position angle, this procedure can also be applied to low declination objects. Some 10 to 20 suitable candidates are available in the RA ranges 18 to 24, and 0 to 6 hours.

Recently, Swaters, Sancisi and Van der Hulst (in preparation) have discovered HI gas in the edge-on galaxy NGC 891 up to 5 kpc above and below the mid plane of the galaxy. Extensive modelling of the data cube (α, δ, velocity) shows that this is most likely due to a thick, low-density component, rotating at somewhat lower speed than the HI gas in the mid plane. For strictly edge-on galaxies one may therefore also place the resolution axis perpendicular to the major axis of the galaxy on the sky, and attempt to detect such a thick HI component. (Using the velocity information one can discriminate between a warp and a thick HI layer.) Unfortunately, no suitable candidates appear to be available in the RA ranges 18 to 24 and 0 to 6 hours, but a few are available with RA between 6 and 18 hours.

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