

Measuring galactic relativistic velocities: a new and direct approach

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The relation between relativistic velocity and redshift is not linear.

We can measure the redshift of a rotating distant galaxy of 3 parts: the receding side of the disk, the center and the approaching side of the disk.

If we now compare the shift of spectral lines of the receding side with the center, and of the approaching side with the center, we get two values.

Because the relation between relativistic velocity is non-linear, this means the difference between redshift of the receding side with the center and the difference of the approaching side with the center; that the receding side difference will always have a bigger value than the approaching side.

We can now create a RECAP ratio (recessional-center-approaching) that is only determined by the relativistic velocity of said galaxy. This ratio only depends on the relativistic velocity, and is not influenced by the spin rate of said galaxy or the absolute value of measured redshift. Thus by measuring this ratio we directly become a corresponding relativistic velocity for said galaxy. This velocity can be used to calculate the redshift that should be measured. This can be used to compare to the actual measured redshift.

This method was first described by me on an online forum, Cosmoquest forum, in a thread started by me with the title 'Doppler thought experiment'.