Dark Matter has huge a.m. if it surrounds spiral galaxies. An alternative for their flat tangential velocity profiles from insight on the physics of gravitation

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Most tangential velocity profiles of spiral galaxies are rather flat after an initial rise. Newtonian gravity-based studies attribute this to the presence of Dark Matter (DM) amounting to many times the visible mass and extending far beyond its limits. To avoid its infall, this DM must be endowed with seriously problematic amounts of orbital angular momentum (a.m.), unless inertial mass is a further DM non-attribute.

New work on the physical mechanism of gravitation [e.g. 1], to be outlined, has revealed that the Newtonian force of any gravitationally-retained assemblage is inescapably accompanied by a radial positive-body-repelling electric field, the Gravity-Electric (G-E) field. Abundant observation establishes its strength in the Earth's ionosphere as ~1 V/m, with 90% of lightning strikes bringing negative charge to ground [2].

The G-E field, acting on sufficiently ionized plasma, can override the Newtonian force and drive the material outward. This gives it two important dynamical properties: (i) the material is driven outward without changing its tangential velocity, so the velocity pattern is not Keplerian and can replicate that exhibited by spiral galaxies; (ii) the outward movement actually creates/increases the a.m. of the material without deriving any from the central body, so it bears on the high a.m. acquired by planets during their construction [3].

Both properties apply if G-E-driven outward flow is present. Spiral galaxies, but (diagnostically) not plasma-poor ellipticals, display major features consistent with radial outflow. One such is the obscuring edge-dust seen in edge-on views. Dust being the product of stellar evolution, it must have come from further within the disc.

[1] Osmaston MF (2013) In *The physics of reality: space, time, matter, cosmos.* (ed. Amoroso, RL, Kauffman, LH & Rowlands, PR) 237-259. World Scientific Publishers.
[2] Osmaston M (2013) *Geophys. Res. Abstr.* **15**, EGU2013-2392.
[3] Osmaston MF (2012) *Session PL2, Exoplanets. NAM2012.*