

## ***Galaxy Rotation Curve Anomaly and Complex Spacetime***

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### ***Abstract***

An alternative viewpoint has been achieved to explain observed anomalies in Galaxy rotation curves without requiring any dark matter existence. The explanation is rooted in a characterisation of spacetime as a Kahler manifold on complex 3 dimensions. Using this fundamental extension in our understanding of reality, it has been derived how the appropriate geodesics on that complex spacetime structure, along with field equations of General Relativity, would behave. Using these generic results, it has then been shown that with appropriate choice of metric one can allow for centrally concentrated density distributions that can generate flatter rotation curves. The concept then has been applied to rotation curves of 4 different galaxies to obtain required density distributions, which shows clear absence of any exterior dark matter halo. Instead all 4 galaxies exhibit a massively concentrated core with a fast diminishing negative energy field around it.

### ***Biography:***

Swagatam Sen is a mathematician and statistician with Masters' degree in Statistics from Indian Statistical Institute which was awarded to him in 2005. Swagatam has had 15 years of experience in Data Science and related quantitative disciplines and is currently running Data Science unit for HSBC in Edinburgh. Aside from his regular profession, he is also an independent researcher in physics working on a number of areas in foundations of physics.

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