

Abstract Submitted
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Newtonian **Fractional-**
Dimension Gravity and Galactic Dynamics¹ GABRIELE VARIESCHI, Loyola
Marymount University — I will present an alternative model of gravity based on
the theory of fractional-dimension spaces applied to Newton’s law of gravitation.
In this Newtonian Fractional-Dimension Gravity (NFDG), Gauss’s law as well as
other fundamental classical gravitational laws are extended to a D-dimensional met-
ric space, where D is a fractional (i.e., non-integer) dimension. NFDG can also be
related to Modified Newtonian Dynamics (MOND) and used to explain the correla-
tion (RAR) between the radial acceleration traced by galactic rotation curves and
the baryonic acceleration obtained from the galactic mass distribution, without any
additional dark matter contribution. In particular, NFDG can be applied to the
galactic dynamics of spherically-symmetric and axially-symmetric structures and
three examples of rotationally supported galaxies (NGC7814, NGC6503, NGC3741)
will also be presented.

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