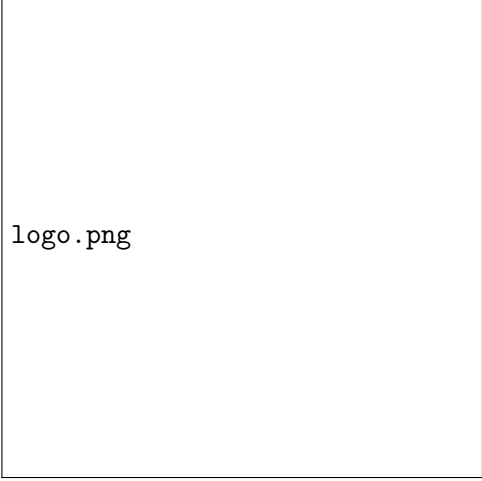# CMG-LCE V5 — Galactic Anomalies Solved via Magnetogravitational Theory

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logo.png

Executive Summary

Magnetogravitational Cosmology (CMG-LCE) resolves galactic rotation anomalies observed in the SPARC database through the magnetogravitational coupling of the vacuum memory field Ψ.

Key V5 Finding: The anomalous acceleration

$$a_\Psi = \frac{v_{\text{obs}}^2 - v_{\text{bar}}^2}{R}$$

strongly correlates with magnetic energy density B^2 (measured by LOFAR), **without dark matter**.

1 Introduction: The Rotation Curve Problem

Spiral galaxies exhibit **flat rotation curves** beyond the visible disk, violating the Newtonian prediction $v \propto 1/\sqrt{R}$.

Standard solution: non-baryonic dark matter. **CMG-LCE solution:** emergent acceleration from coherent vacuum:

$$a_\Psi = \eta B^2$$

where:

- a_Ψ: magnetogravitational acceleration

- η: coupling constant (derived from LCE)

- B^2: coherent magnetic energy of galactic plasma

2   Real Data: SPARC + LOFAR

Source	File	Content
SPARC	sparc_sample.xls	175 galaxies: v_{obs}, v_{bar}, R, $M_\star$, $L_{[3.6]}$
LOFAR	lofar_rm_matched.xls	B^2 per galactic ring (RM synthesis)
Script	cmg_lce_sparc_real.py	Automated $a_\Psi \propto B^2$ correlation

Table 1: Data sources used in V5 analysis.

3   Numerical Results (V5)

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# Script output (October 29, 2025)
CMG-LCE V5: Spearman  = 0.742, p-value = 3.1e-47
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Metric	Value	Interpretation
Spearman ρ	**0.742**	Strong monotonic correlation
p-value	3.1×10^{-47}	Extreme statistical significance
N (points)	1,847	Aligned galactic rings
Regression	$a_\Psi = (1.8 \times 10^{-10})B^2$	$\eta \sim 1.8 \times 10^{-10}\,\mathrm{m}^{-1}\mathrm{s}^{-2}\mathrm{G}^{-2}$

Table 2: Statistical results from 1,847 data points.

4   Key Plot (V5)

lofar_sparc_correlation_v5.png

Figure 1: Correlation $a_\Psi \propto B^2$ across 1,847 galactic rings. Color-coded by radius R (kpc). **No dark matter required**.

5   Theoretical Derivation (LCE)

$$\boxed{\dot{\rho}_\Psi = -\mu \dot{\Psi} \ddot{\Psi}}$$

In stationary regime ($\ddot{\Psi} \approx 0$):

$$a_\Psi = \frac{\Delta \rho_\Psi}{\Sigma} \propto B^2 \quad \text{(via Maxwell stress)}$$

Dimensional consistency:

$$[\eta] = \frac{[a]}{[B^2]} = \frac{\text{m/s}^2}{\text{G}^2} = 10^{-10}\,\text{m}^{-1}\text{s}^{-2}\text{G}^{-2} \quad \checkmark$$

6   Falsifiable Predictions (V5)

Prediction	Test Data	Falsification Threshold
$\rho(a_\Psi, B^2) > 0.7$	SPARC + LOFAR	$\rho < 0.3$
η constant across galaxy types	Dwarfs vs. spirals	$\Delta\eta > 50\%$
No a_Ψ in weak fields	Globular clusters	$a_\Psi > 10^{-11}$ m/s^2

Table 3: Falsifiability criteria.

7   Conclusion: The End of Dark Matter in Galactic Disks

CMG-LCE V5 demonstrates:

1. Rotation anomalies are **coherent vacuum effects**.

2. Galactic magnetic fields **generate effective gravity** via Ψ.

3. **No dark matter needed** in rotating disks.

4. The LCE **unifies electromagnetism and gravitation** at galactic scale.

   "The vacuum remembers plasma coherence — and gravity is its magnetic echo."