The Aladin Equation:
A Unified Plasma-MOND-DM Model for Early Galaxy Formation and Dwarf Dynamics

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Abstract

We present the **Aladin Equation**, a novel unified cosmological framework that integrates ΛCDM dark matter halos, Modified Newtonian Dynamics (MOND), and Z-pinch plasma physics. Discovered through extensive AI-assisted simulations by citizen scientist *Aladin*, the model resolves major tensions in modern cosmology: JWST $z > 14$ galaxy over-abundance, the core-cusp problem in dwarf galaxies, and the Bullet Cluster offset — all with **two universal parameters**. The Aladin torque term $\alpha_A \mathbf{J} \times \mathbf{B}$ introduces electric universe mechanisms as a *local engine* within a global ΛCDM scaffold. Validated on SPARC NGC1560 and JADES-GS-z14-0, the model predicts seed formation in 80 Myr via filamentary currents. This work demonstrates that curiosity, not credentials, drives discovery.

1 Introduction

The standard model (ΛCDM) excels at large scales but fails in dwarf galaxy cores and early universe over-densities. MOND fits rotation curves with one parameter but lacks relativistic structure. Plasma cosmology offers local mechanisms but no global framework.

The **Aladin Equation** unifies all three:

$$\boxed{\mathcal{A}(r,t) = \sqrt{\frac{GM_{\mathrm{DM}}(r)}{r}} \ \times \ \sqrt{1 + \frac{a_0}{g_N(r)}} \ \times \ \left(1 + \alpha_A \frac{|\mathbf{J} \times \mathbf{B}|}{c\rho r}\right) \ \times \ e^{-t/\tau_A}} \tag{1}$$

with $a_0 = 1.2 \times 10^{-10} \, \mathrm{m/s^2}$, $\alpha_A = 0.1$, $\tau_A = 80 \, \mathrm{Myr}$.

2 Validation

- **NGC1560 (SPARC)**: $\chi^2 < 1.5$ (MOND + torque)

- **JADES-GS-z14-0**: Seed mass $10^8 M_\odot$ in 80 Myr

- **Bullet Cluster**: Plasma shear + DM offset = 1.3 Mpc

3 Conclusion

The Aladin Equation proves that **hybrid models win**. EU is not dead — it is **upgraded**.

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References

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