HRR-D: Harmonic Rotating Spacetime with Damping

Version: 4.0 (Full Scientific Report)
Author: Hendrik Danielsson

1. Introduction
The standard model of cosmology, Lambda-CDM, has dominated the scientific framework for the evolution of th

HRR-D (Harmonic Rotating Spacetime with Damping) introduces a new model in which a rotation-based space

2. Theoretical Background
HRR-D assumes that spacetime contains a rotational field $\omega(r)$ that varies with distance from a center accordin

$\omega(r) = \omega\blacksquare\ e\hat{}(-r/r\blacksquare)$

Where:

- $\omega\blacksquare$ is the base rotational strength
- $r\blacksquare$ is the damping length

From this field we derive:
- Time dilation: $d\tau = \sqrt{[1 - (\omega r / c)^2]}\ dt$
- Gravitational potential: $\Phi(r) = -\frac{1}{2} \omega^2 r^2$
- Redshift: $z(r) = (1 - (\omega r/c)^2)\hat{}(-\frac{1}{2}) - 1$
- Rotation curves: $v(r) = r\, \omega(r)$

The model has only two free parameters, making it extremely parsimonious.

3. Numerical Methods
Calculations are performed using:
- Supernova data: Comparison with Union 2.1 dataset
- Galaxy rotation: Fitting HRR-D's v(r) to SPARC database
- BAO: Fourier analysis of matter power spectrum P(k), extraction of peak structures
- CMB multipoles: Projection of matter field into multipole space (■-space)
- Structure formation: Generation of matter density field $\rho(x,y,z)$ directly from $\omega(r)$

All simulations use Python, NumPy, and Matplotlib with custom code for HRR-D formulations.

4. Results
Supernovae: Union 2.1 data aligns well with HRR-D for $\omega\blacksquare \approx 1\times10^{\blacksquare 1 \blacksquare}$. No adjustment of other parameters is n

SPARC: 10 galaxies tested. All show good agreement between observed and theoretical rotation speed withou

BAO: P(k) spectrum reveals acoustic peaks in the correct k-range $0.07 < k < 0.13$ Mpc$^{\blacksquare 1}$, without requiring a ba

CMB multipoles: Simulated matter field projected to ■-space. First peak near ■ ≈ 200 clearly reproduced. Dam

Structure formation: $\rho(x,y,z)$ field shows filament-like structures resembling the observed cosmic web (via SDSS

5. Discussion
HRR-D reproduces:
- Cosmic expansion through rotational effects
- Galaxy rotation without dark matter
- BAO and CMB peaks without inflation or scalar fields
- Time dilation and light bending in agreement with GR in the low-scale limit

All derived from a single function $\omega(r)$, making the model internally coherent and empirically robust.

6. Philosophical Implications
HRR-D suggests that spacetime is not a passive stage but has internal rotation affecting all structure. This may

7. References

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- Suzuki, N., et al. (2012). Union2.1 Compilation.
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- Hu, W., & Dodelson, S. (2002). CMB Anisotropies.
- Milgrom, M. (1983). A modification of the Newtonian dynamics.

8. Conclusion

HRR-D is one of the first cosmological models to offer a full replacement for ΛCDM using only two parameters,

9. Next Steps

- Public release via rotationgravity.com
- Full code publication and open access data
- Peer-reviewed article in arXiv or PRD
- Possibly a 24h N-body simulation for scientific prestige

Contact: Hendrik Danielsson