Proposal: Search for a 13.037 TeV Dijet Resonance Predicted by Matrix Node Theory (MNT)

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Test 4: Flat Galaxy Rotation Curves Without Dark Matter Particles

Prediction:
Matrix Node Theory (MNT) predicts the emergence of flat rotation curves in galaxies purely from its node energy structure, without requiring cold dark matter (CDM) halos:

- **Predicted asymptotic rotation velocity:**

$$v_\infty \approx 200\,\mathrm{km/s}$$

  for typical spiral galaxies.

- Derived from the MNT energy term:

$$E_{DM}(r) = N_c \kappa(r)\rho \left[1 + \gamma\kappa(r)\right]^2$$

  where $\kappa(r) = \kappa_0 \frac{R_0}{r}$ and parameters:

$$N_c = 1.33 \times 10^{-6}, \quad \gamma = 9.81 \times 10^{-5}, \quad R_0 = 8\,\mathrm{kpc}$$

- This structure reproduces flat v_∞ velocities at large r, matching observed galaxy rotation curves without particle dark matter.

Proposed Experiment:

- **Facility:** VERA survey (Japan), GAIA (ESA), and HI surveys (e.g., ALFALFA, THINGS).

- **Dataset:** Low surface brightness (LSB) galaxies and dwarf galaxies where dark matter effects are prominent.

- **Search method:** Measure rotation velocities $v(r)$ and compare against MNT's prediction of flattening at $v_\infty \approx 200\,\mathrm{km/s}$ from node structure, without invoking dark matter profiles.

Why Important (Predictive Power):

- Standard CDM requires particle dark matter halos; MNT reproduces flat curves from energy structure alone.

- Predicts correct asymptotic v_∞ velocities matching observed galaxy surveys.

- Offers a falsifiable test: if rotation curves match MNT's formula without dark matter, this supports MNT.

- Challenges the need for dark matter particles — a central open problem in cosmology.