

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

Jordan Ryan Evans
Independent Researcher
evanshypno@gmail.com

May 10, 2025

Overview

This document proposes a targeted search within ATLAS/CMS Run 2 data for a narrow dijet resonance at 13.037 TeV, as predicted by the Matrix Node Theory (MNT) framework. The signal is expected to manifest as a bump in the dijet invariant mass spectrum with a width of approximately 0.26 GeV.

Prediction Details

- **Predicted particle mass:** 13.037 TeV
- **Intrinsic width (FWHM):** 0.26 GeV
- **Production mechanism:** Gluon–gluon fusion
- **Dominant decay:** Dijet ($E \rightarrow jj$), BR 100%
- **Estimated production cross-section:** 5 fb at $\sqrt{s} = 13$ TeV

Recommended Search Parameters

- **Mass window:** 12.9–13.1 TeV (± 0.1 TeV around central mass)
- **Channels:** Dijet final states ($pp \rightarrow E \rightarrow jj$)
- **Data set:** Run 2 full dataset (140 fb^{-1}), or inclusion in Run 3 analyses

Motivation

Matrix Node Theory (MNT) proposes a discrete energy level structure underlying observed Standard Model constants. The predicted "Evans Particle" at 13.037 TeV is the highest energy state accessible within current LHC capabilities and constitutes a direct test of MNT's validity.

Given that the predicted cross-section (5 fb) and narrow width fall within LHC detection capabilities, a focused bump hunt is feasible with existing data. The presence of such a resonance would have profound implications for particle physics and warrants investigation.

Contact

Jordan Ryan Evans

Email: evanshypno@gmail.com

Website: www.jremnt.com