Executive Summary

Methodological Framework for High-Density Systems Analysis

- **CONTEXT:** Multi-Variable Modeling of Evolutionary Systems.
- **OVERVIEW**: Applying the analytical precision of astrophysics to map the evolution of complex, high-density environments. This research utilizes SDSS data and spectroscopy to isolate quenching triggers—the specific environmental variables that cause a system to transition from active to passive states.
- **KEY FINDING**: Quantified the temporal delay between environmental shifts and physical transformation, resulting in a predictive model for systemic change.
- **STRATEGIC FOCUS**: Large-scale Data Analysis, Pattern Identification, Predictive Modeling.

***Source**: INAF – Osservatorio Astronomico di Padova. Part of the Erasmus Mundus Joint Master in Astrophysics (2010–2012).*