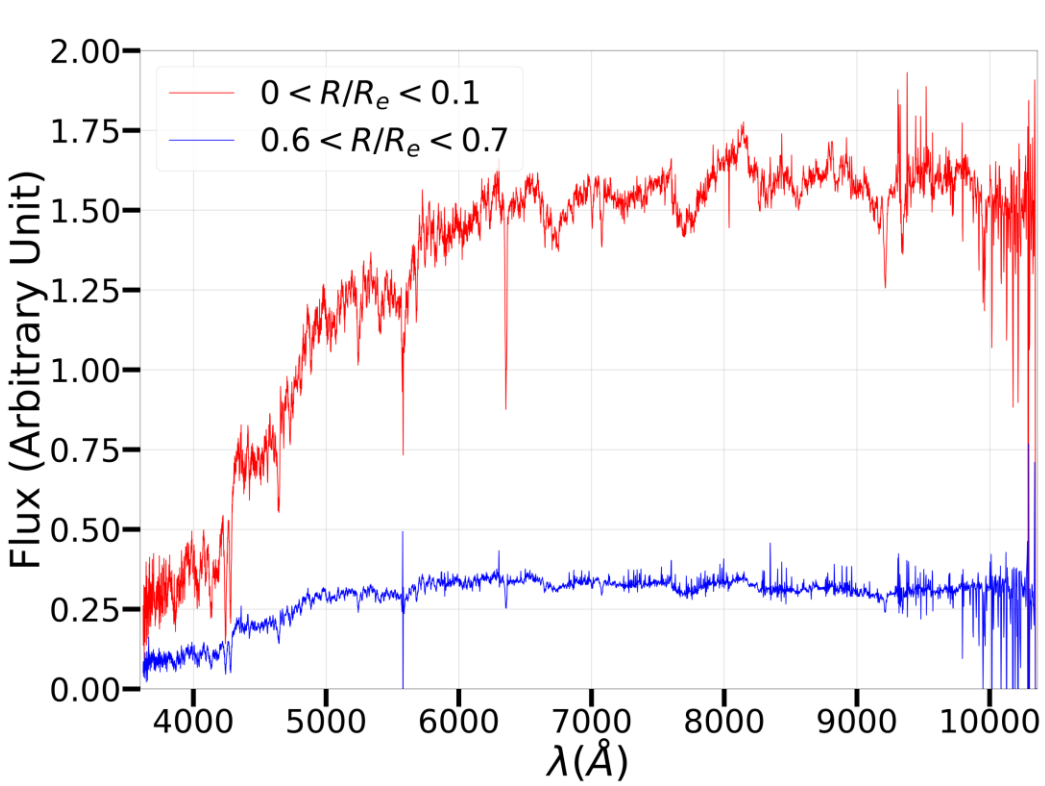
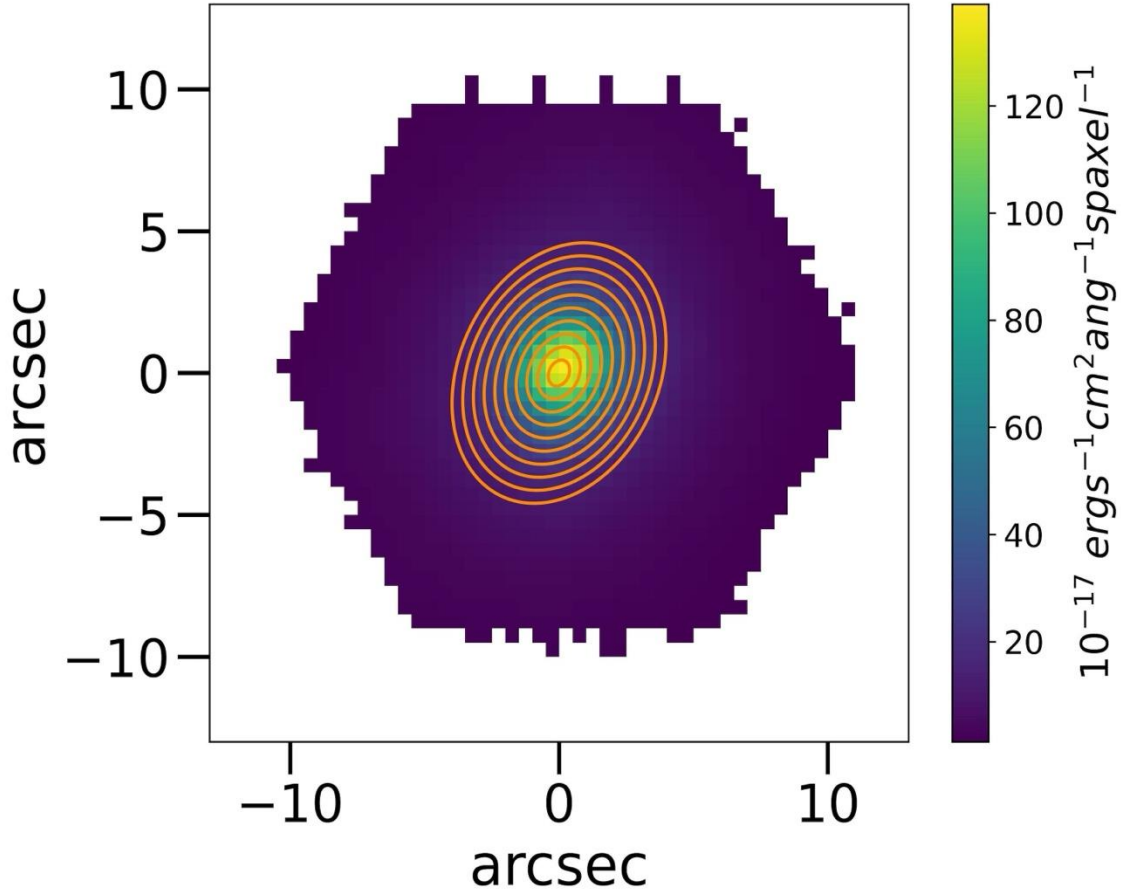
Investigating Formation and Evolution of ETGs using MaNGA Data

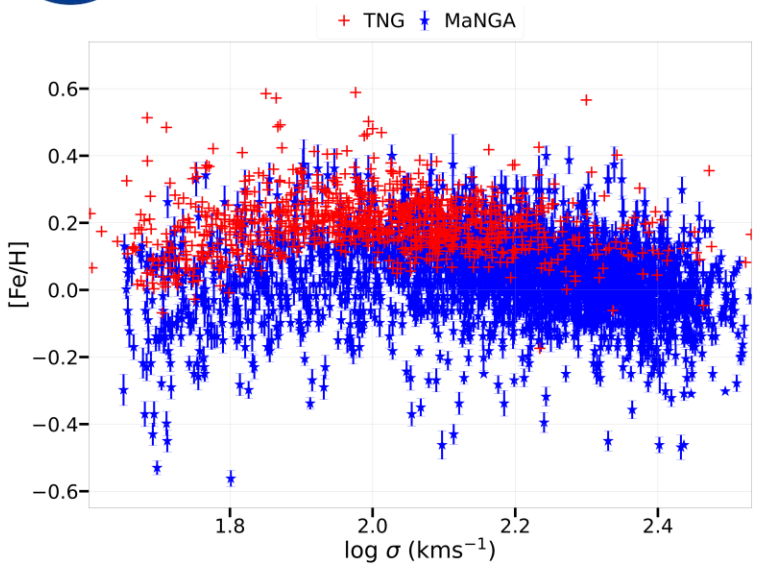
Tathagata Pal
NASA Postdoctoral Fellow, Goddard Space Flight Center, USA
tathagata.pal@nasa.gov

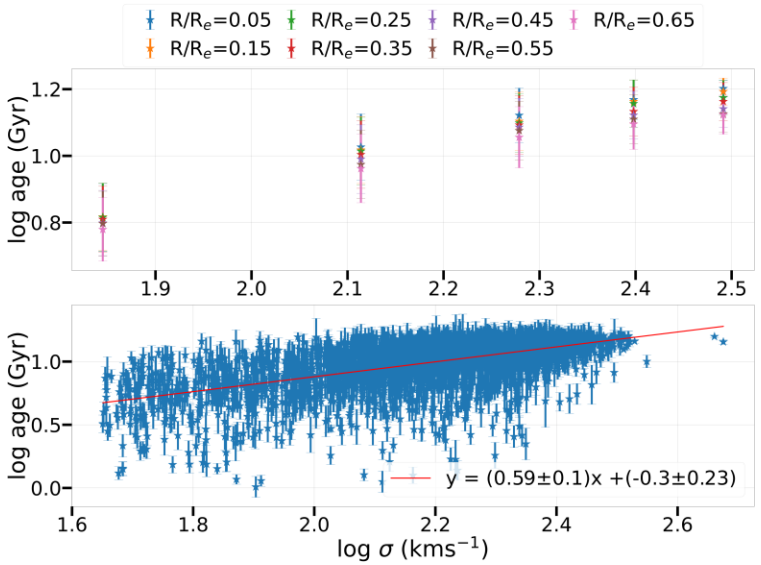


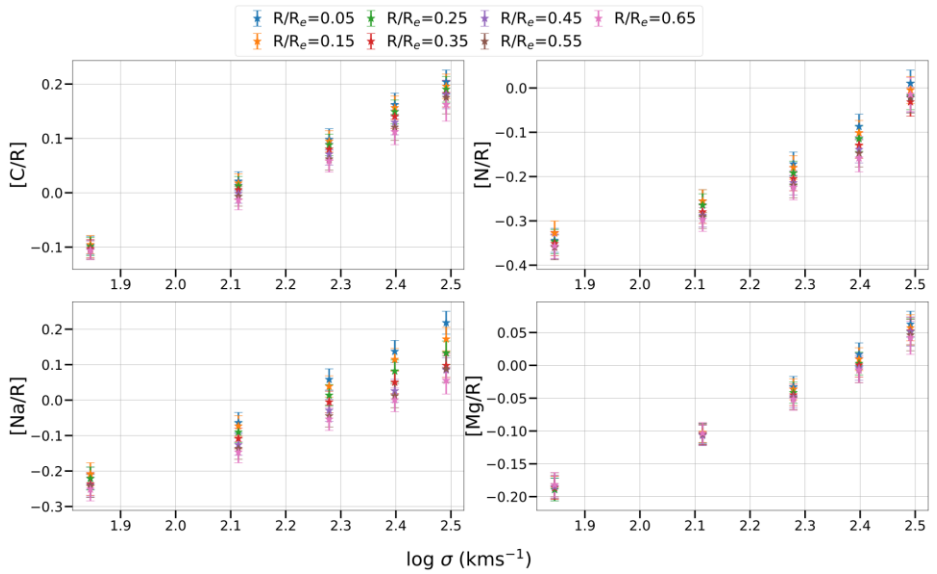


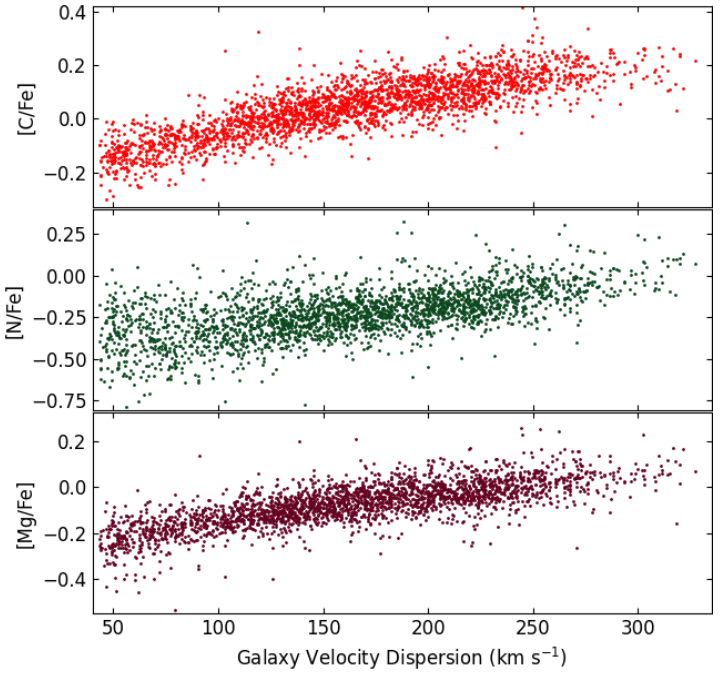
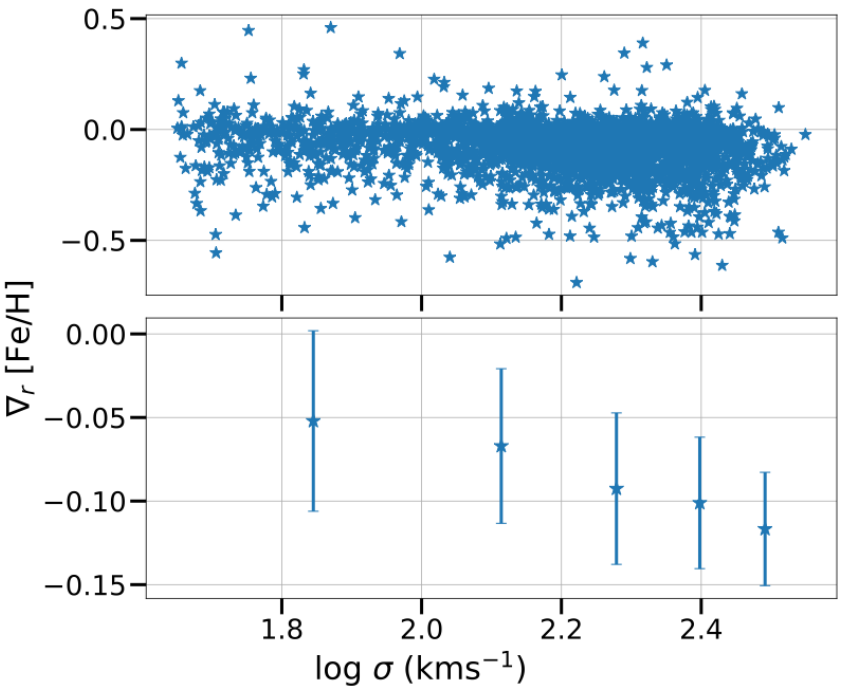
- Each galaxy was divided into 10 annular regions (R/Re = 0–1.0, ΔR/Re = 0.1), and an average spectrum was created for each annulus.
- Stellar population parameters (age, [Fe/H], C, N, Na, Mg) were derived using Worthey (1994) SSP models, and radial gradients were calculated.

Results for age, [Fe/H], and elemental abundances









- Age and elemental abundances generally increase with σ, while [Fe/H] exhibits an inverted bell-shaped profile, consistent with TNG simulations.
- Across σ bins, all parameters except [Fe/H] show negligible average radial gradients.
- The trends suggest a merger-dominated galaxy evolution history.
- Distinct features such as the “iron-kink” (top left) and “nitrogen fuzz” (bottom left) are clearly visible.