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## https://ui.adsabs.harvard.edu/abs/2021arXiv210607658P/abstract

We identify hierarchical structures in the Vela OB2 complex and the cluster pair Collinder 135 and UBC 7 with Gaia EDR3 using the neural network machine learning algorithm StarGO. Five second-level substructures are disentangled in Vela OB2, which are referred to as Huluwa 1 (Gamma Velorum), Huluwa 2, Huluwa 3, Huluwa 4 and Huluwa 5 shown in the right figure. Based on our finding on the age spread and mass stratification in Vela OB2, among Huluwa 1–5, we propose an alternative scenario in which Huluwa 1–5 have originated from sequential star formation while supernova explosion quenched the star formation in Huluwa 4–5.
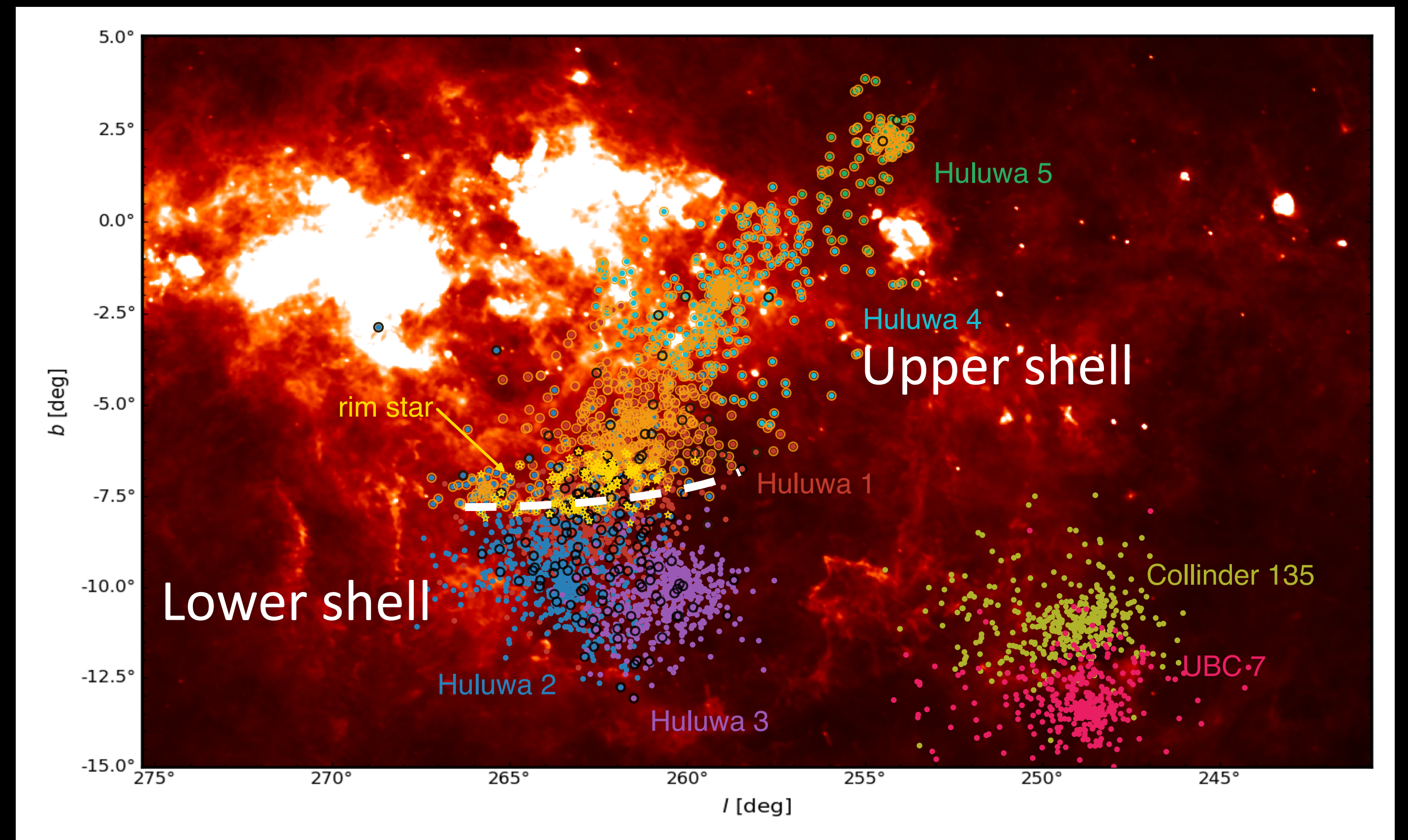
Age spread and mass stratification

Age spread
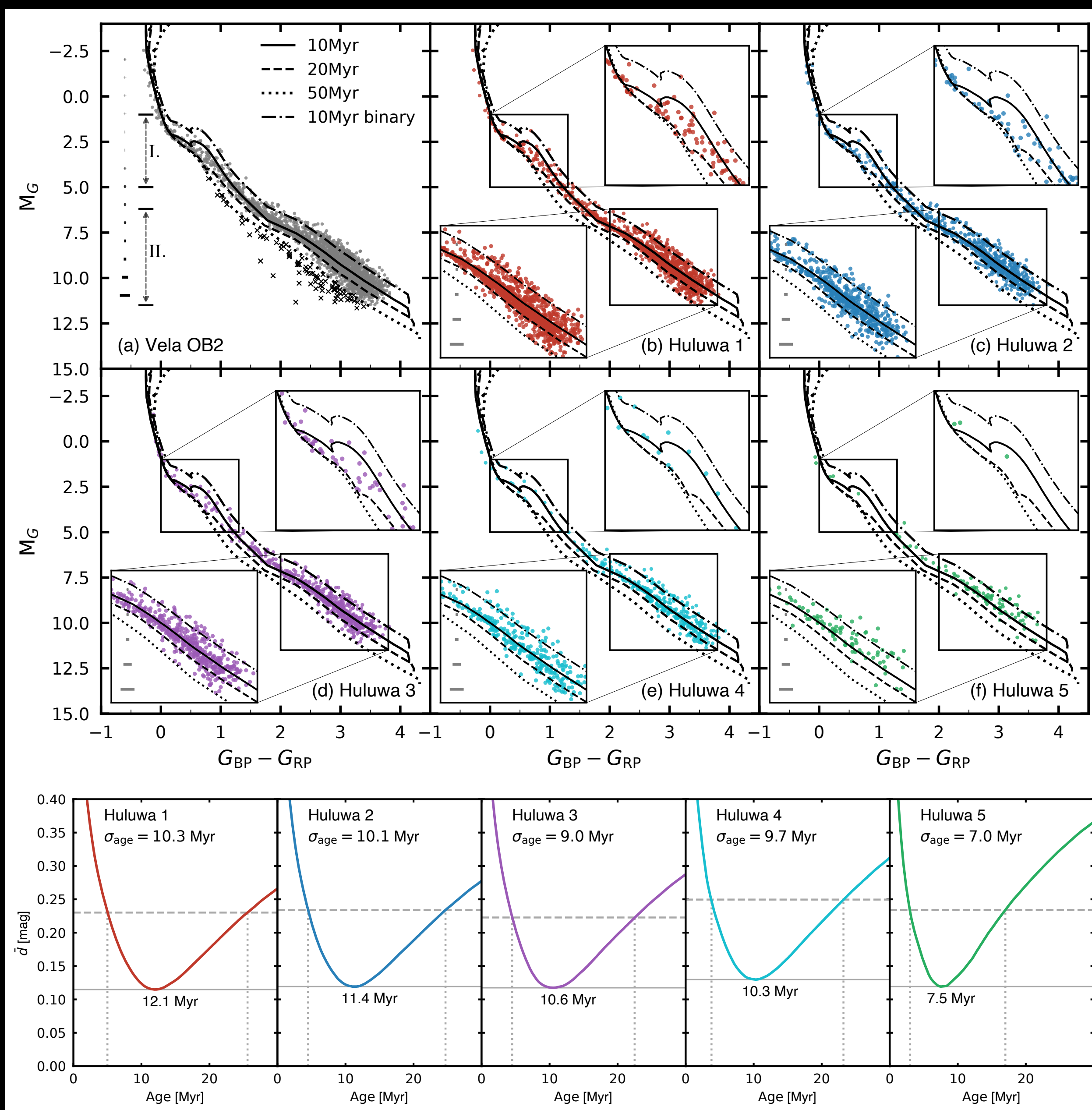
The older clusters Huluwa 1–3 with an age of 10–22 Myr younger-generation Huluwa 4–5 (7–20 Myr).
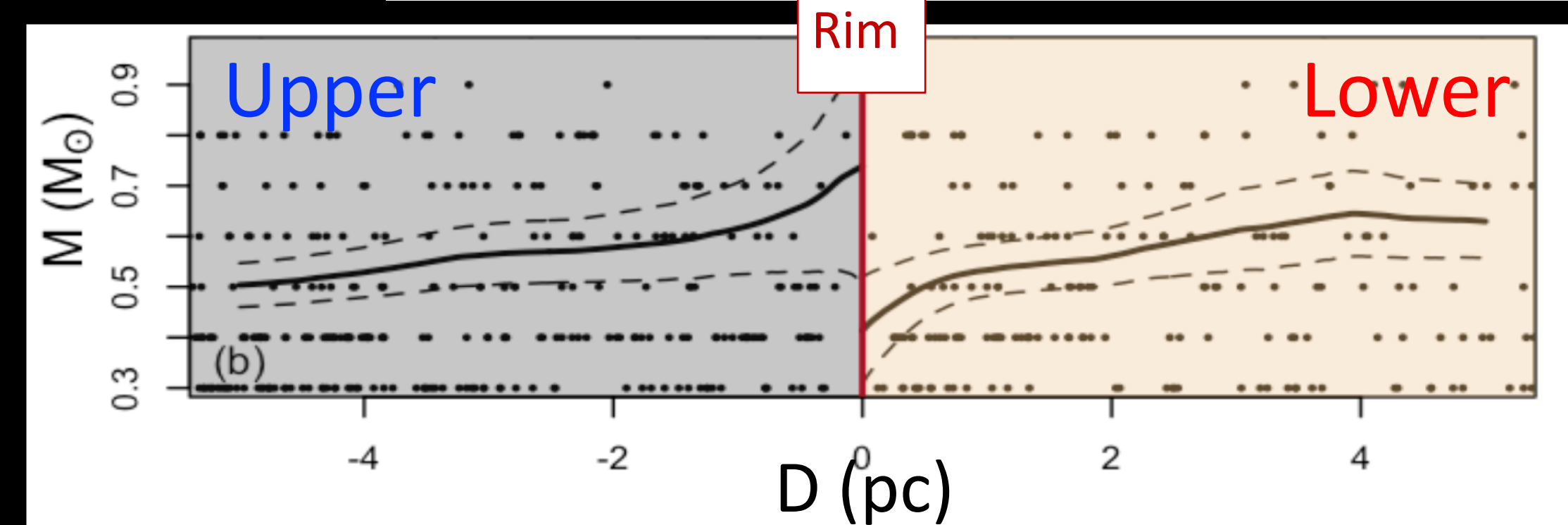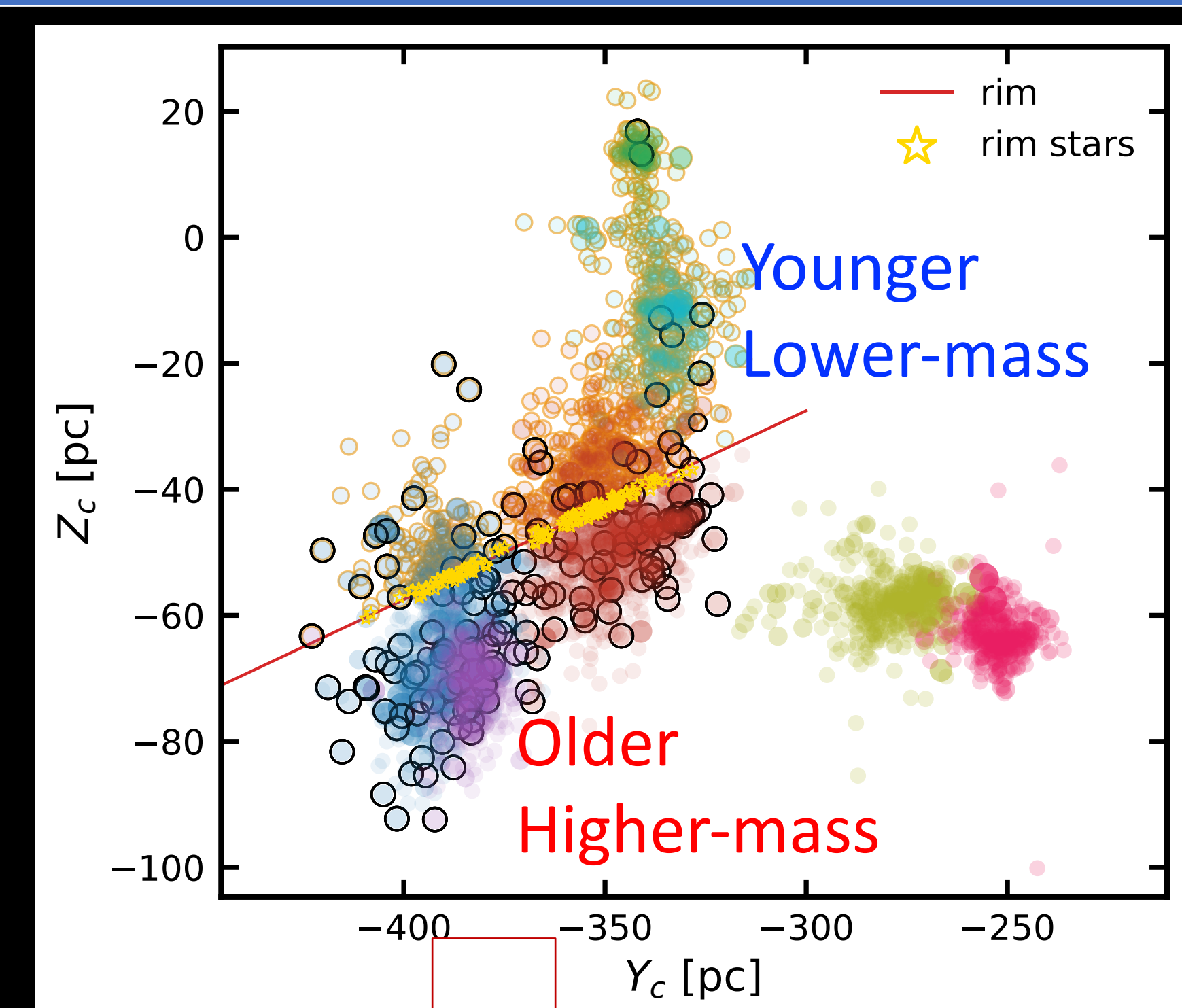
The global mass stratification across the shell is confirmed by the regression discontinuity method. The stellar mass in the lower rim of the shell is 0.32 ± 0.14 M⊙ higher than in the upper rim.

Star formation scenario

We propose an alternative scenario in which Huluwa 1–5 have originated from sequential star formation. The older clusters Huluwa 1–3 with an age of 10–22 Myr, generated stellar feedback to cause turbulence that fostered the formation of the younger-generation Huluwa 4–5 (7–20 Myr). A supernova explosion located inside the Vela IRAS shell quenched star formation in Huluwa 4–5 and rapidly expelled the remaining gas from the clusters. This resulted in global mass stratification across the shell.