



Erratum: “Feedback in Emerging extragalactic Star Clusters: JWST Spots Polycyclic Aromatic Hydrocarbon Destruction in NGC 628 during the Emerging Phase of Star Formation” (2024, ApJ, 971, 32)

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We report an error found in the calculation of the total L ($3.3 \mu\text{m}$) and L ($7.7 \mu\text{m}$) luminosities shown in Figure 8 of the original paper. The error affected the convolution step between JWST filter throughputs and a given input spectrum. As a consequence, the published ratios estimated for the B. T. Draine et al. (2021) models and the T. S. Y. Lai et al. (2020) observations are a factor of ~ 2.4 and ~ 1.6 smaller than previously estimated and visualized in Figure 8 of the published paper, respectively.

The updated correct plot is included in this erratum (Figure 8). In the corrected version of the plot, we see that our measurements become more consistent with the observed ratio extracted at the galactic scale T. S. Y. Lai et al. (2020).

Comparing our ratio with the models of B. T. Draine et al. (2021), the updated model ratios show that our measured values lie between different families of models, which include (filled circles) and exclude (open circles) neutral polycyclic aromatic hydrocarbons (PAHs). Differently from what was concluded in the published paper, ionized-only PAH models are not sufficient to explain the observed ratios. Further conclusions made in the published paper are still valid. In the majority of the cases, the observed ratios remain below the predicted values by models with combined neutral and ionized PAH populations. We direct the reader to Section 5.3 of the published paper for a discussion of the possible mechanisms that might be behind the reported trends.

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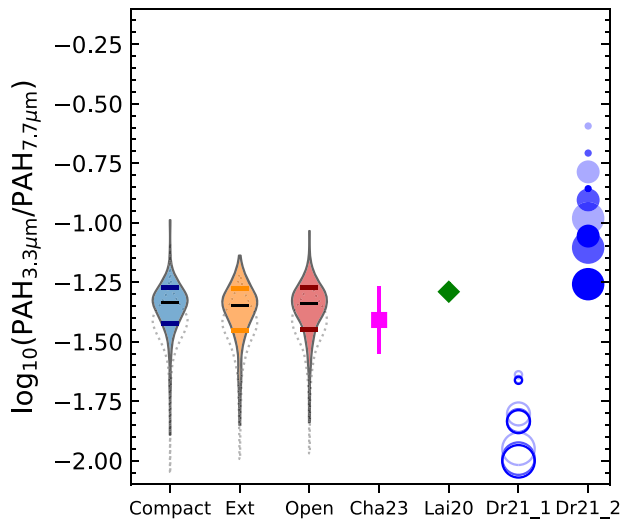


Figure 8. Revised version of Figure 8 in the published paper. From left to right: the violins show the $\text{PAH}_{3.3\ \mu\text{m}}/\text{PAH}_{7.7\ \mu\text{m}}$ ratio color-coded by the different morphology classifications, as described in the main text in the published paper. The median value for each distribution is indicated by a black horizontal line, while the 16th and 84th percentiles are marked with colored horizontal lines. The unfilled dotted violins show the same distributions as before but without the application of continuum subtraction for the $7.7\ \mu\text{m}$ emission map. The median value of the $\text{PAH}_{3.3\ \mu\text{m}}/\text{PAH}_{7.7\ \mu\text{m}}$ ratio for the total emission in NGC 628 obtained by J. Chasten et al. (2023) is displayed by the magenta filled square, where error bars show the 16th–84th percentiles of the distribution. The green filled diamond marks the ratio obtained from the spectrum of the 1C star-forming galaxy sample (T. S. Y. Lai et al. 2020). For comparison with our observations, the spectrum is convolved with the JWST filter throughputs and continuum subtracted in the same way as our data. The error bars fall within the boundaries of the symbol. The blue circles in the plot represent the $\text{PAH}_{3.3\ \mu\text{m}}/\text{PAH}_{7.7\ \mu\text{m}}$ ratios from the models of B. T. Draine et al. (2021). These models assume an unreddened 3 Myr old starburst as the illuminating starlight spectrum, with solar metallicity and $U = 1$. The models are convolved with the JWST filter throughputs, without applying any continuum subtractions. Open circles correspond to models considering only ionized PAHs and astrodrust (Dr21_1), while the filled circles include the contribution from neutral PAHs (Dr21_2). The opacity of the circles indicates the level of ionization in the models, with higher opacity corresponding to higher ionization. Additionally, the size of the circles reflects the PAH size distribution, with larger circles representing larger size distributions. In this updated version of the plot, the green diamond represents a value that is approximately 1.6 times smaller than the one reported in Figure 8 of the published paper. The updated ratios for the B. T. Draine et al. (2021) models are approximately 2.4 times smaller than those originally reported.

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