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Slaughter, C.; Tielens, A.G.G.M.; Karim, R.

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A Modeled Radiation Field Search for Feedback Structures in the Greater Orion Nebula Region

Catherine Slaughter¹ Alexander Tielens¹ Ramsey Karim²

¹Leiden Observatory, ²University of Maryland, College Park

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The Orion Nebula contains the closest active star-forming region to Earth, and has been used extensively to study stellar feedback. Expanding such studies beyond Orion would be immensely useful to further our understanding of stellar feedback, and new methods for finding such regions would be helpful to this end. We establish and test a new method for searching for regions of significant local stellar feedback in nebulae. We use the Greater Orion Nebula for this test, as it is already well understood. Particularly massive O and B type stars are especially energetic, and therefore crucial for our models of local stellar feedback. Using *scooby*—a software made to model radiation field strength in star clusters—we are able to compare the modeled radiation field from the O and B type stars both with and without the influence of Theta 1 Ori C. In doing so, we identify several regions where we can expect local feedback to be dominated by stars other than Theta 1 Ori C. We then use velocity spectrum averaging and PV diagram analysis to search for bubble structures in these areas. Using this radiation-field method, we easily find the usual regions of interest (M42, M43, NGC 1977) in the greater Orion Nebula, as well as several others that have not previously been studied. Our analysis of velocity structures near Theta 2 Ori A and HD 37150 indicate bubbles around these stars. We find that our modeled radiation field region-finding method is an effective way to search for possibly unknown regions of interest in the study of stellar feedback. In testing this method, we also confirm previous studies of a bubble structure around Theta 2 Ori A, and introduce a possible new bubble structure near HD 37150.