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Distribution of Carbon and Sulfur in the Crab Nebula[1] ANDREA KATZ, GORDON MACALPINE, Trinity University — Chemical elements heavier than hydrogen and helium are made in stars, and investigations of the Crab Nebula supernova remnant provide excellent opportunities for understanding how stars make elements through nucleosynthesis processing and distribute them explosively. Carbon and sulfur are particularly important in this regard, because they are tracers of where helium and oxygen nuclear fusion have taken place. During the past year, we obtained and calibrated [CI] $\lambda\lambda$9823, 9850 and [SIII] λ9069 emission-line images of the Crab Nebula, using appropriate filters at the 1.3-meter telescope of the Michigan-Dartmouth-MIT Observatory located on Kitt Peak in Arizona. Then we combined the emission-line flux distributions with a suite of more than 1000 numerical photoionization computations in order to map the actual carbon and sulfur abundances over the observed nebular structure. The results and implications for nuclear processing and distribution will be discussed.

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