

OPTICAL AND INFRARED PROPERTIES OF THE NEWLY FORMED STARS IN
CMA R1

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UBVRIJHKL photometry and MK spectral types have been obtained for stars illuminating nebulae in the CMA R1 association. Five stars, including the two classical Herbig-emission-stars Z CMA and HD 53367, have (K-L) excesses and/or emission line spectra indicating the presence of circumstellar matter. A number of stars also have (V-K) indices larger than expected on the basis of their spectral types and (B-V) indices, suggesting that a steeper than normal extinction law applies to these stars. The color-magnitude diagram for the association is unusual; many stars over the entire spectral range of the association (B0 to A1) lie more than 1 magnitude above the ZAMS in V. The middle and early type B stars with this property are all variable stars and most have rotationally broadened spectra and/or shell indicators. No stars later than B5 are on the main sequence, making CMA R1 probably the youngest stellar group yet identified. It suggests an age of $\sim 3 \times 10^5$ years, compatible with the suggestion that a supernova explosion triggered star formation in this region. A comparison is made between the observations and theoretical models of pre-main sequence stars. A bolometric luminosity of $M_{\text{bol}} < -4.3$ is derived for Z CMA implying a core mass of $M > 10 M_{\odot}$, and a spectral type of $\sim B1$, if the star is on the ZAMS.