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Detection of Late-Time Optical Emission from SN 1941C in NGC 4136

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We report the detection of broad oxygen emission lines from the site of SN 1941C nearly eight decades after outburst, making it the oldest detected core-collapse SN/youngest core-collapse SNR with a well determined age. In sharp contrast to the strongly blueshifted emission line profiles observed for some other late-time CCSNe thought to be due to dust extinction of rear hemisphere ejecta, SN 1941C's spectrum exhibits stronger redshifted emissions of [O I] 6300, 6364 [O II] 7320, 7330, and [O III] 4959, 5007. The oxygen emissions have rest frame radial velocities from -2200 to +4400 km/s. No other significant broad line emissions were detected including H-alpha emission. We discuss possible causes for this unusual spectrum and compare SN 1941C's optical and X-ray luminosities to other evolved CCSNe.