A flattening in the Optical Light Curve of SN 2002ap [S. B. Pandey et al.] S. B. Pandey

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We present the $UBVR_cI_c$ broad band optical photometry of the Type Ic supernova SN 2002ap obtained during 2002 February 06 – March 23 in the early decline phases and also later on 2002 15 August. Combining these data with the published ones, the general light curve development is studied. The time and luminosity of the peak brightness and the peak width are estimated. There is a flattening in the optical light curve about 30 days after the $B$ maximum. The flux decline rates before flattening are 0.127±0.005, 0.082±0.001, 0.074±0.001, 0.062±0.001 and 0.040±0.001 mag day$^{-1}$ in $U$, $B$, $V$, $R_c$ and $I_c$ passbands respectively, while the corresponding values after flattening are about 0.02 mag day$^{-1}$ in all the passbands. The maximum brightness of SN 2002ap $M_V = -17.2$ mag, is comparable to that of the type Ic 1997ef, but fainter than that of the type Ic hypernova SN 1998bw. The peak luminosity indicates an ejection of $\sim 0.06 M_\odot$ $^{56}$Ni mass.

We also present low-resolution optical spectra obtained during the early phases. The SiII absorption minimum indicates that the photospheric velocity decreased from $\sim 21,360$ km s$^{-1}$ to $\sim 10,740$ km s$^{-1}$ during a period of $\sim 6$ days.