

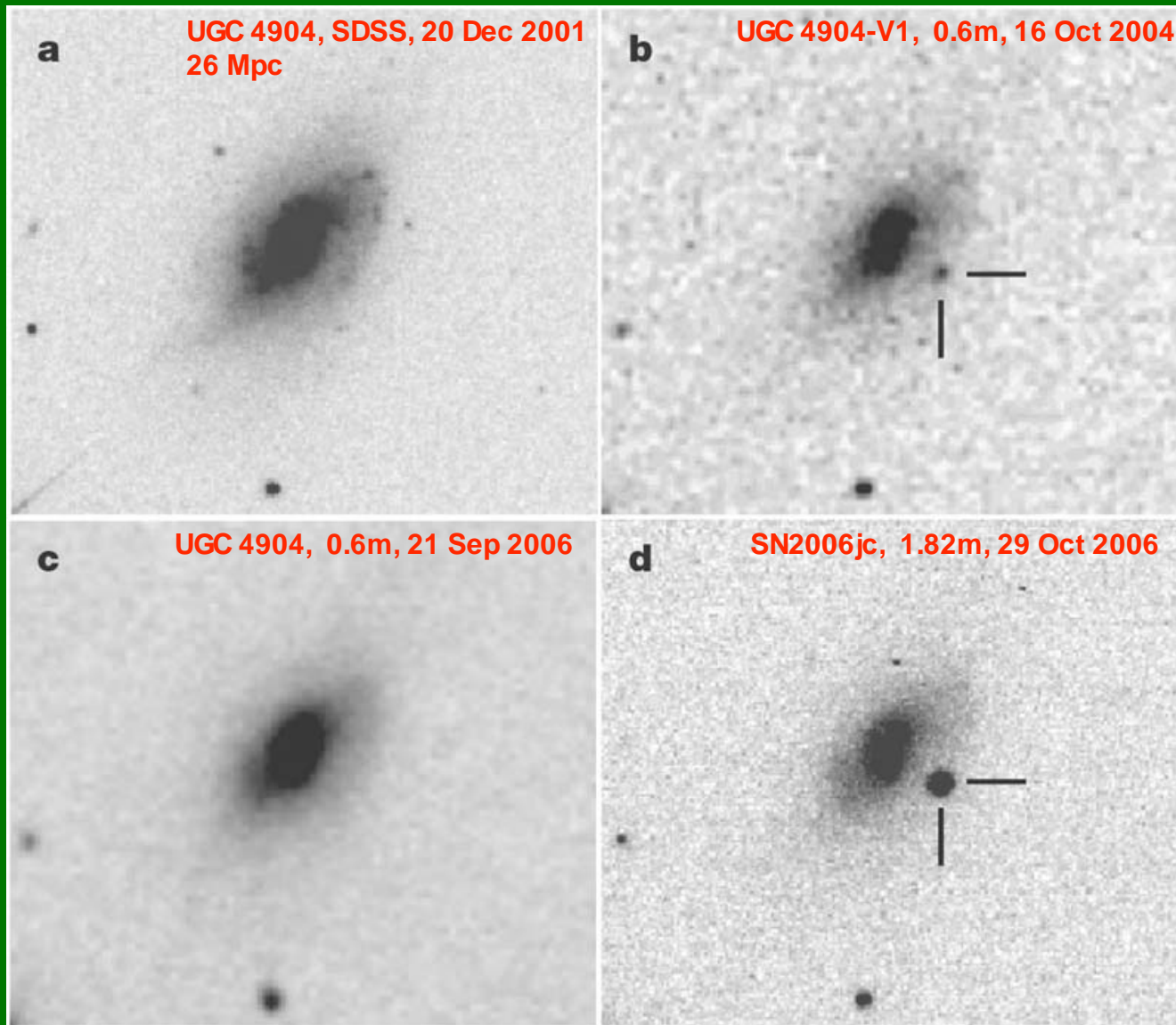
KITP, 20 November 2007

*An outburst two years
prior to core collapse*

Elena Pian

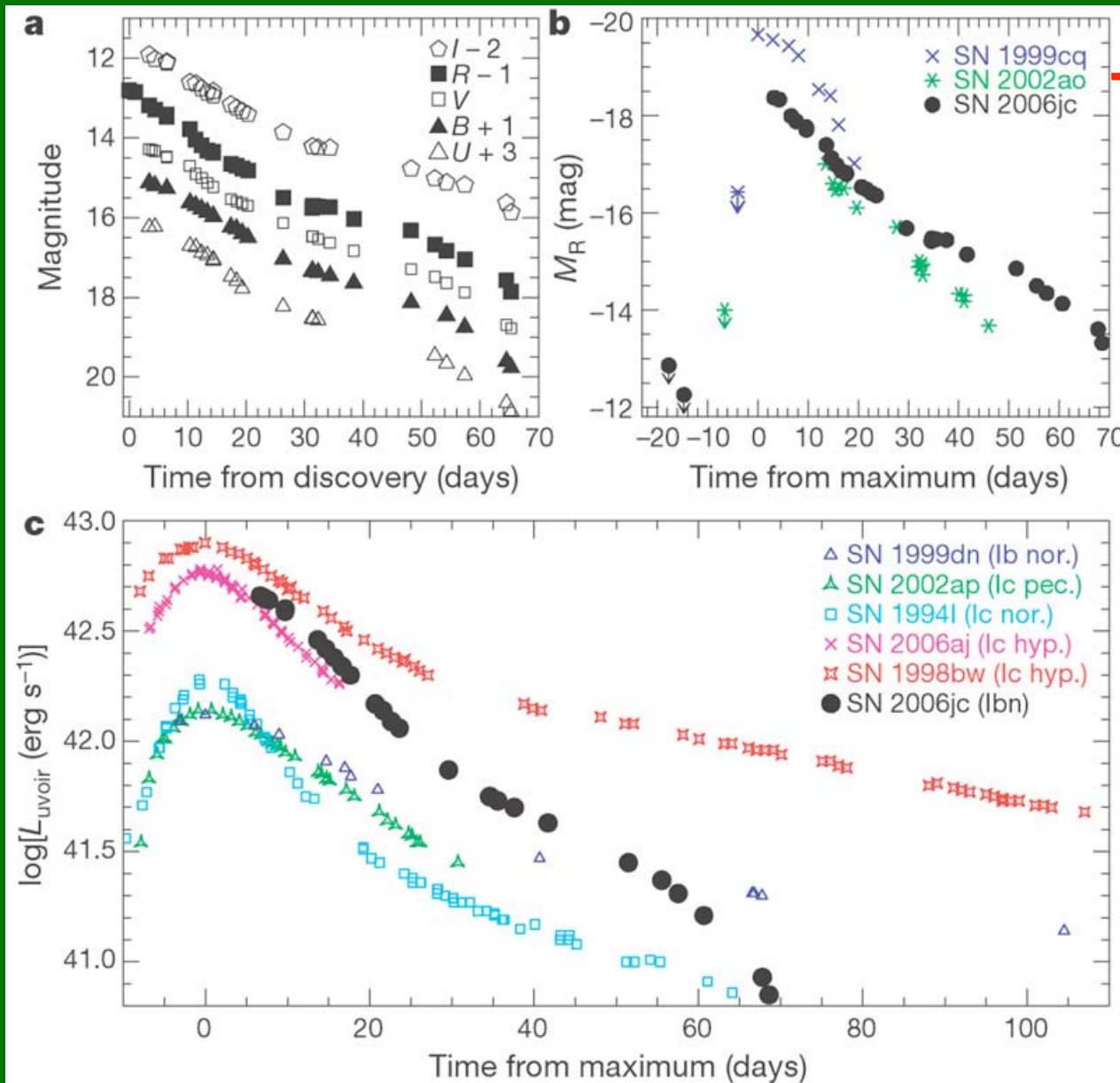
INAF, Trieste Astronomical Observatory & KITP

SN2006jc and optical transient UGC 4904-V1



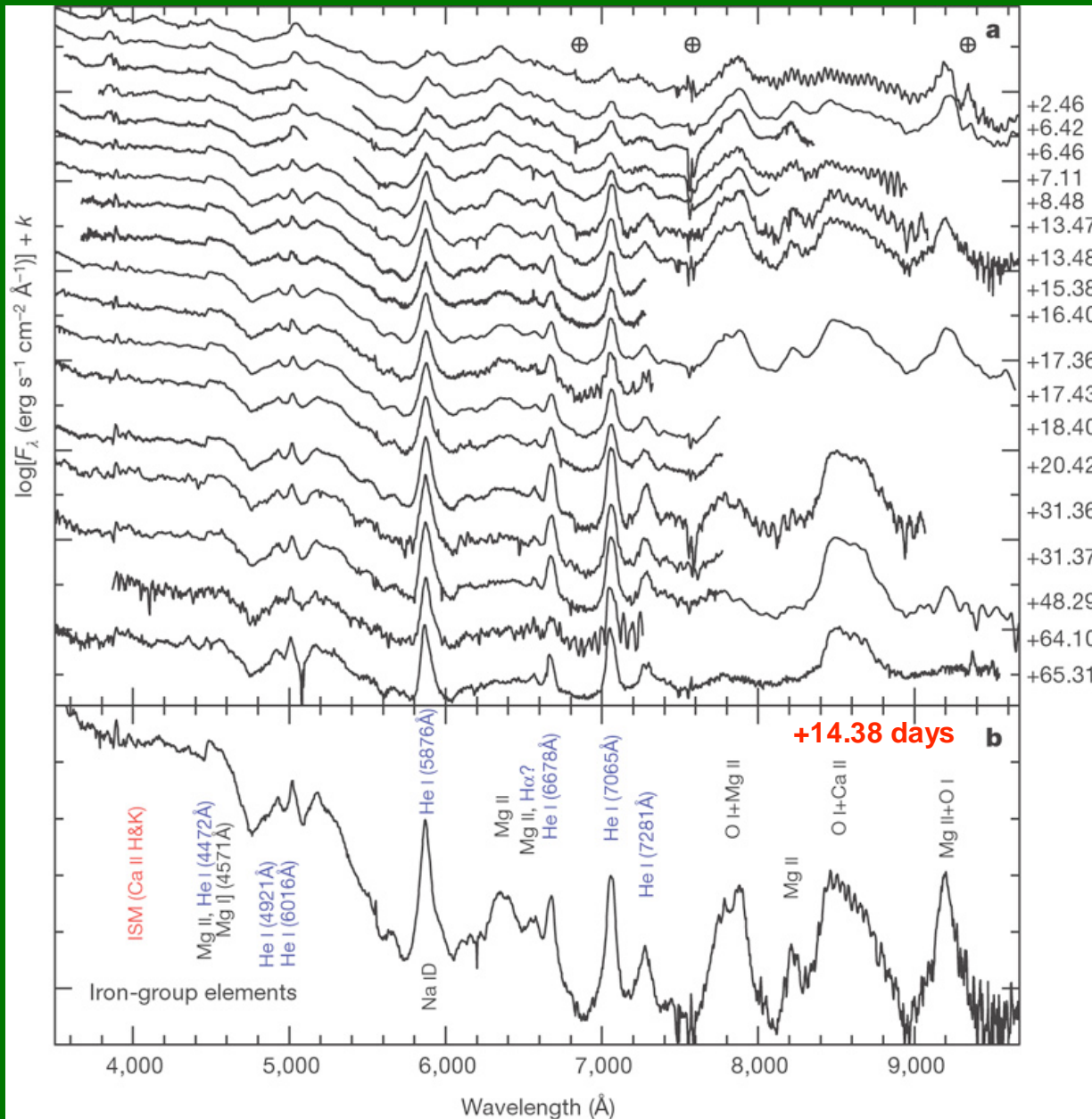
Pastorello et al. 2007; Foley et al. 2007

SN2006jc: an interacting Type Ibn supernova



Ibn's

SN 2006jc spectra

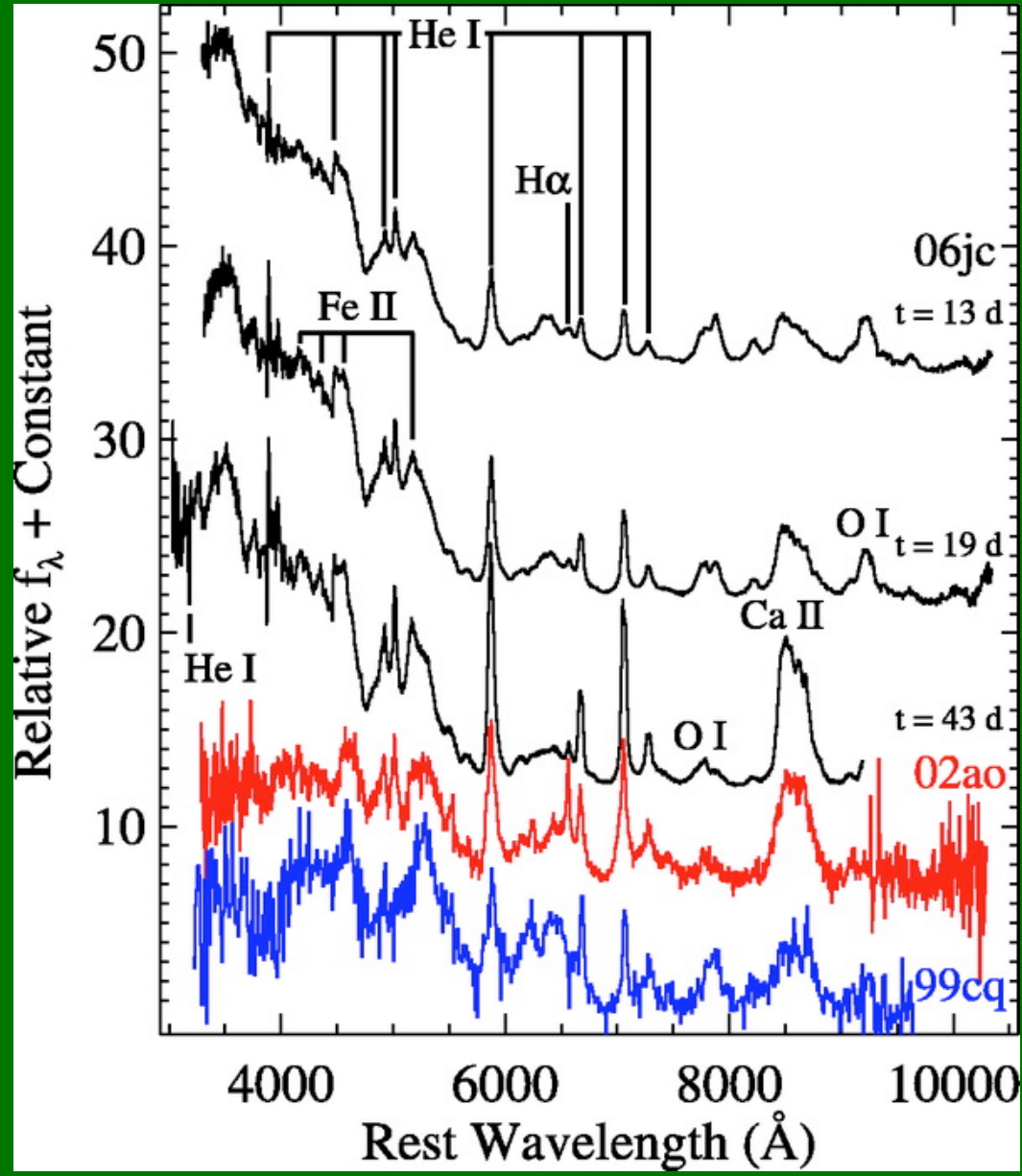


Broad (4000-9000 km/s)
And narrow (~2200 km/s)
Helium emission lines

Typical Ic SN spectrum
with narrow He emission,
But no clear absorption
Lines!!

See also blue continuum
And X-ray emission
Detected by Swift/XRT
(7e39 erg) and Chandra
(6e38 erg/s) in 0.2-10 keV

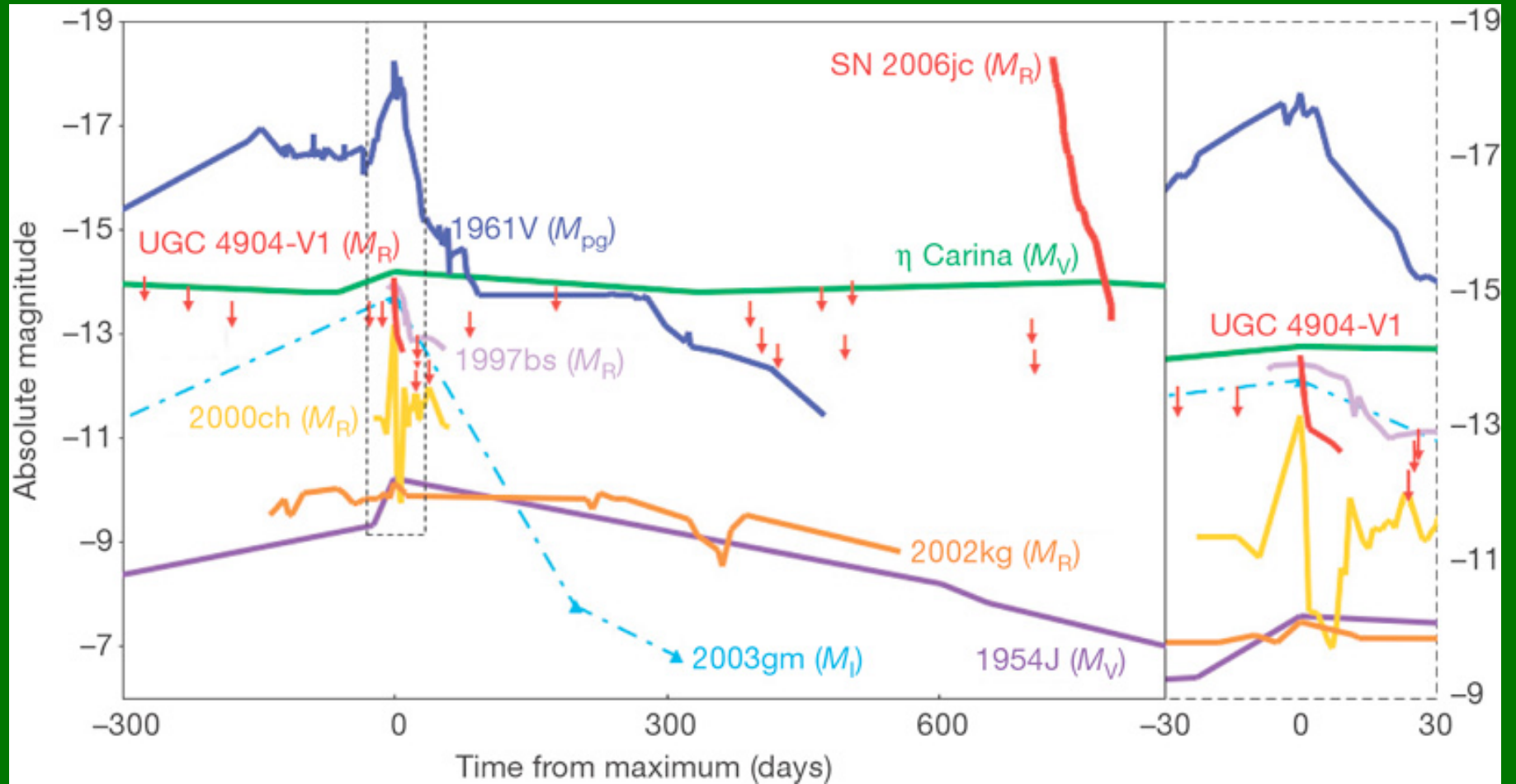
Interacting SN or SN
Impostor?

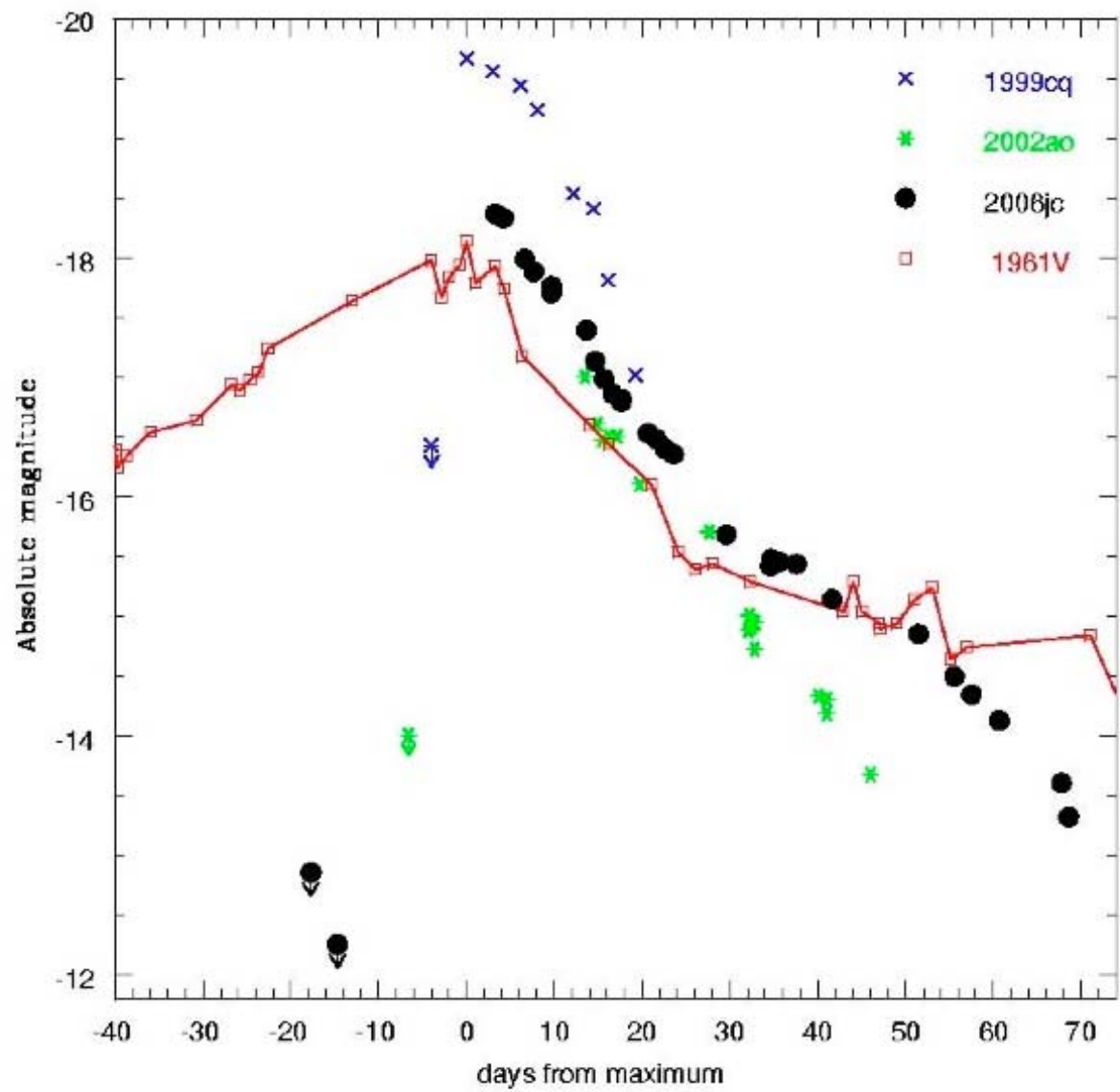


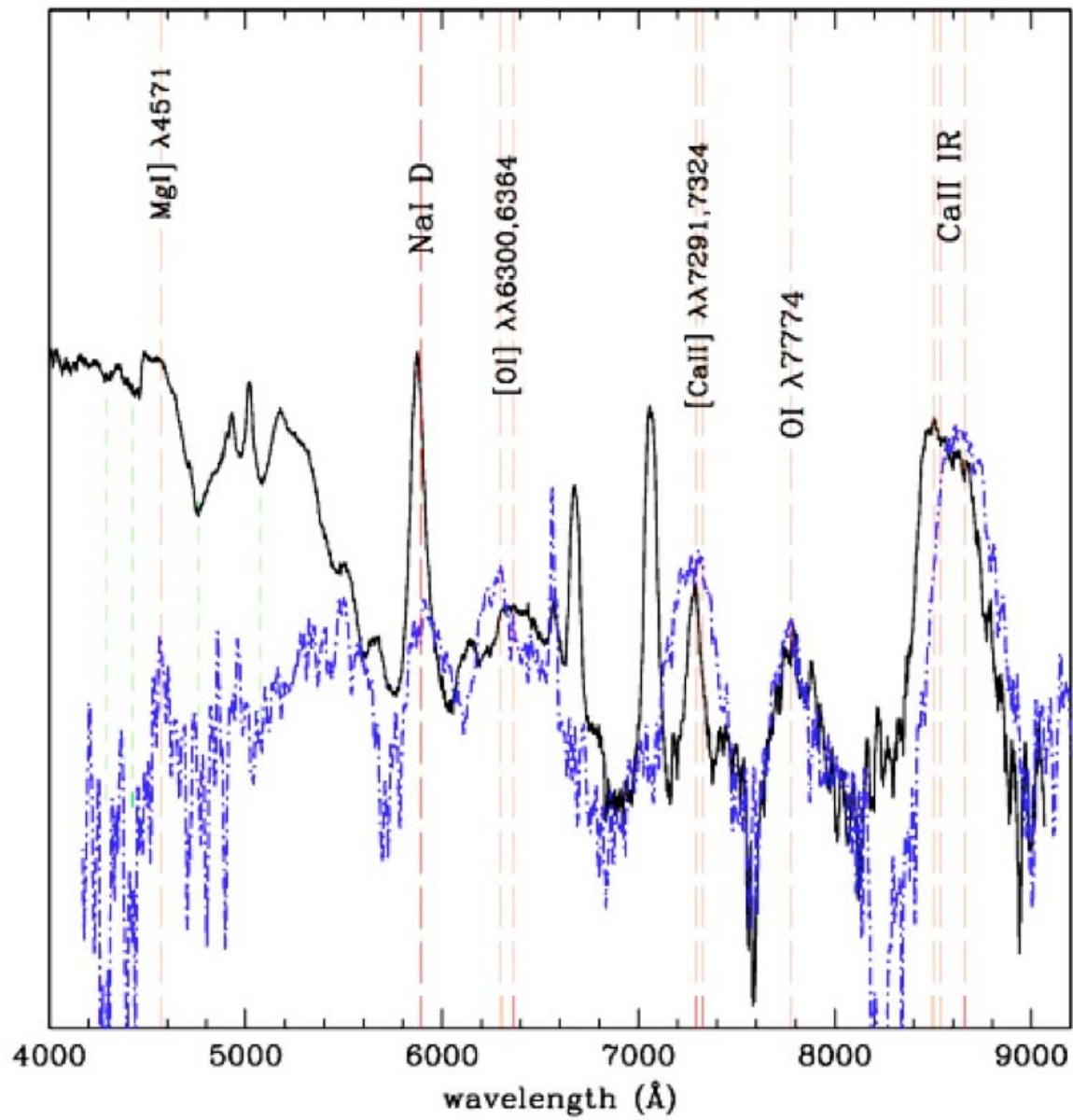
Keck spectroscopy

H α at early times

History of giant outbursts of Luminous Blue Variables (“Supernova Impostors”)







Summary

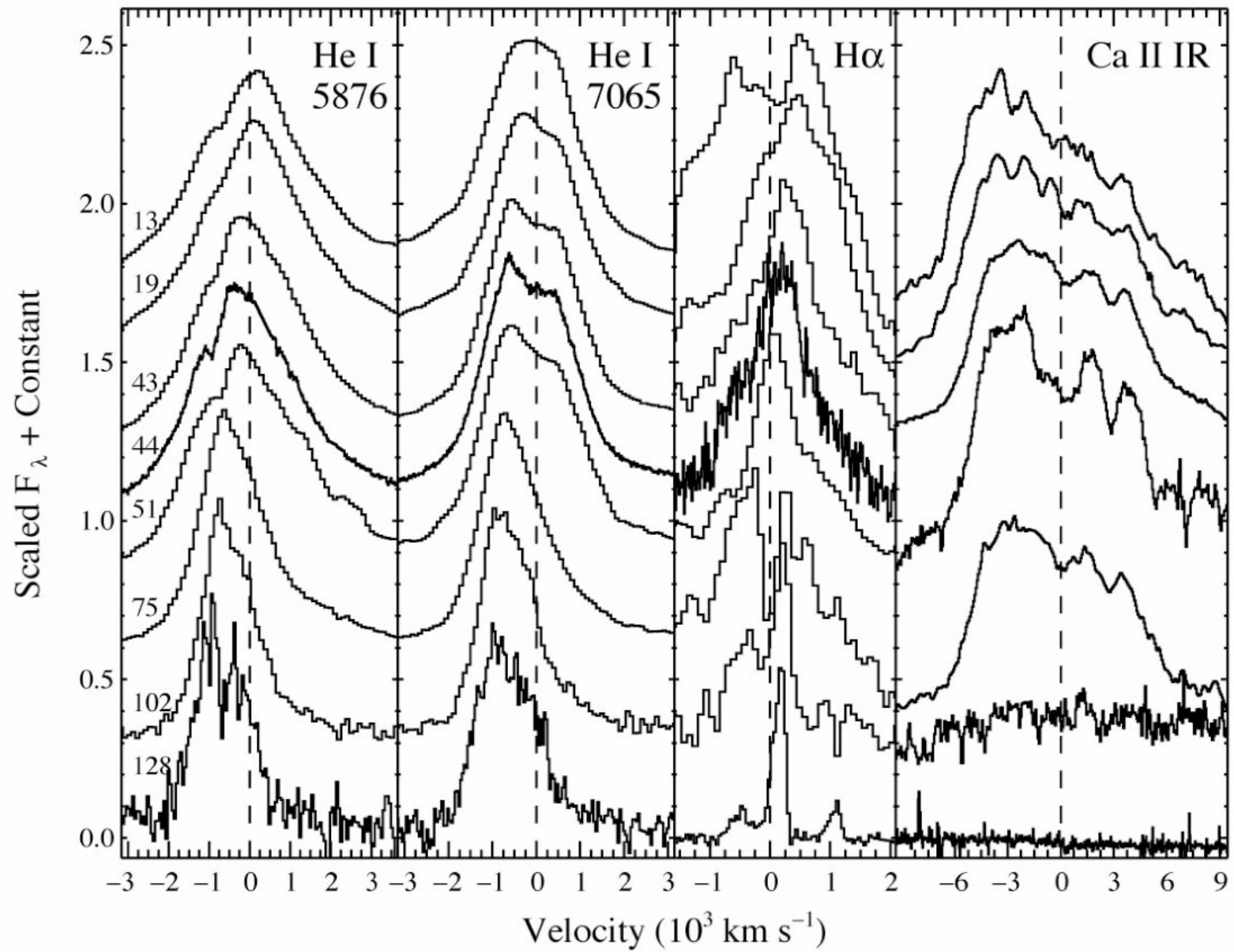
The blue spectral continuum of SN 2006jc, the narrow lines and the strong X-ray Emission are interpreted as a signature of interaction between SN ejecta and circumstellar medium.

Massive stars do not undergo core-collapse in LBV stage, and it is unlikely that Type Ib/c explosions would be produced, anyway.

The SN 2006jc progenitor and the UGC4904-V1 LBV may be members of a Binary system: an evolved Wolf-Rayet star explodes as Type Ic SN, and the Interaction with the rich circumstellar medium of the companion produces He lines.

This would be consistent with the detection of a hot companion of the Eta Carinae LBV.

Alternatively, SN 2006jc is a SN impostor: a weak $H\alpha$ P-Cygni line has been Detected in early spectra, and $H\alpha$ in net emission in the late spectra.



Dust at 1600 K formed in the CSM swept up by the SN blast

