Radial Dependence of Extinction in Parent Galaxies of Supernovae

Bojan Arbutina[1,2]

[1] Astronomical Observatory, Volgina 7, 11160 Belgrade
[2] Department of Astronomy, Faculty of Mathematics, Studentski trg 16, 11000 Belgrade

barbutina@aob.bg.ac.yu

Supernovae

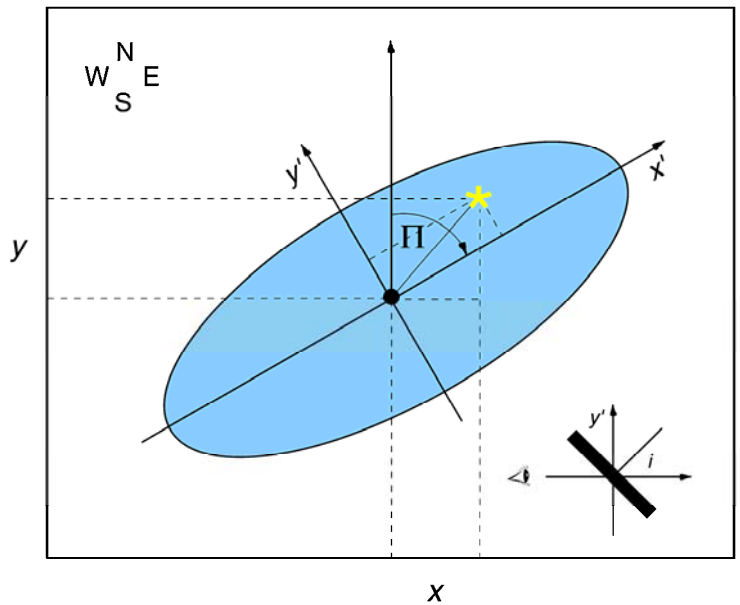
- Spectral classification: Ia, II, Ib/c

- problem of extinction; the plane-parallel model which gives absorption dependent on galaxy inclination was shown not to describe extinction adequately (Cappellaro et al. 1997)

  - We try to apply an alternative model which introduces radial dependence of extinction (Hatano et al. 1998)

  - Radial position of SN in a galaxy:

$$r^2 = d^2\left((x')^2 + (y')^2 \sec^2 i\right) = d^2\left(x^2 + y^2\right)\cdot$$
$$\cdot\left(\cos^2(\arctan(y/x) + \Pi - 90^\circ) + \sin^2(\arctan(y/x) + \Pi - 90^\circ)\sec^2 i\right),$$



A model

- there is a certain trend of dimmer SNe Ib/c with decreasing relative radius (Arbutina 2005)

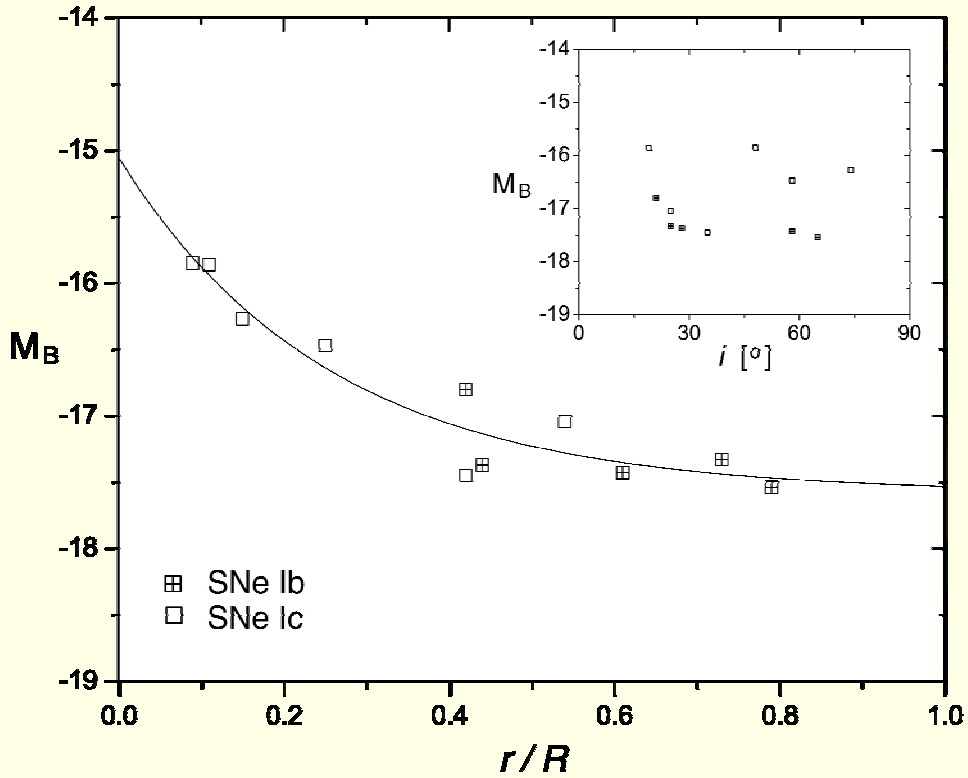
$$M_B^0 = m_B - \mu - A_G - A_g = M_B - A_g$$

$$M_B = M_B^0 + A_o e^{-\alpha_o r/R}.$$

- absolute magnitude:

$$M_B^0 = -17.58 \pm 0.27.$$

- SNe Ib/c as the second best "standard candles"?



Thank you!


OMNIA IN NUMERO ET MENSURA
1887


МАТЕМАТИЧКИ ФАКУЛТЕТ
У БЕОГРАДУ
1873