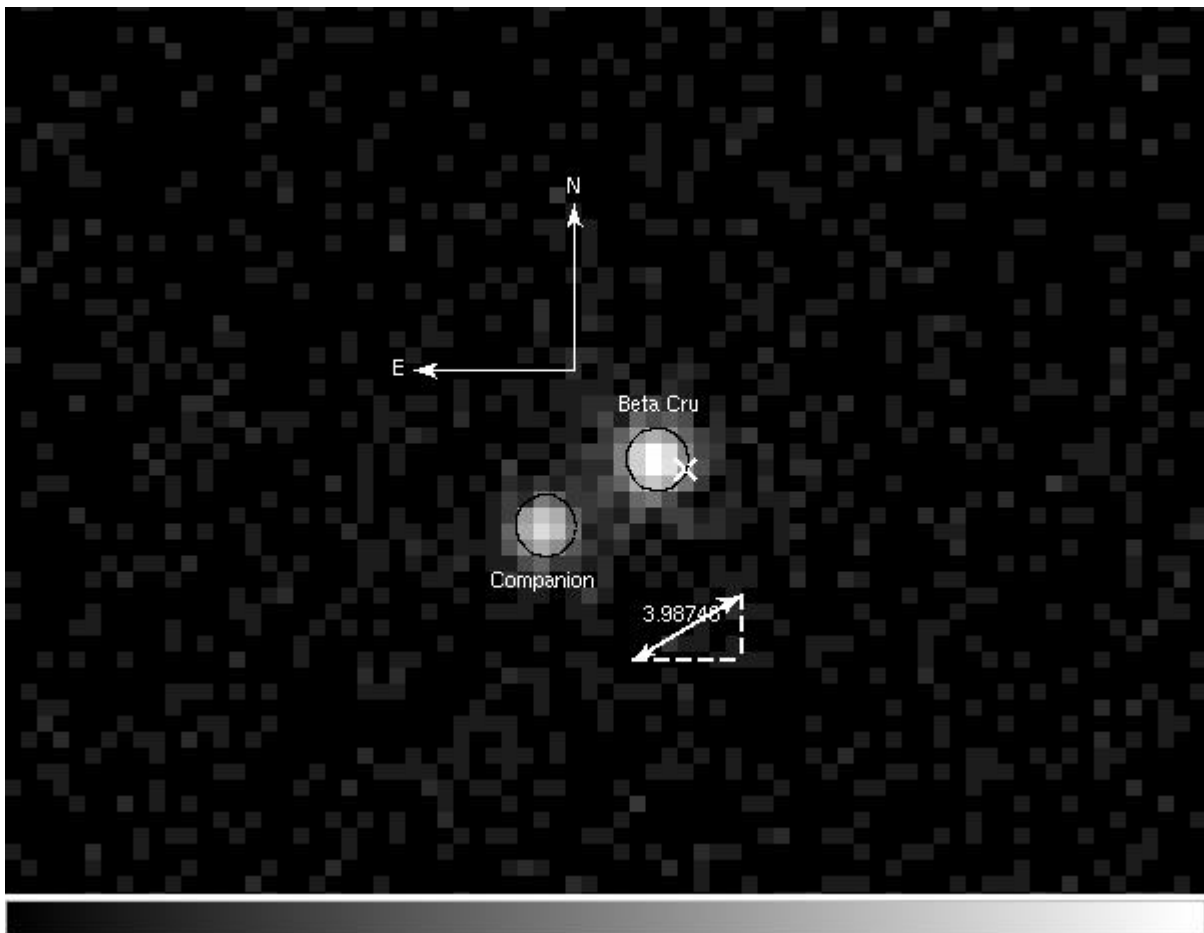


β Cru = HD111123 = Becrux = Mimosa

Finding Chart – this is an image of the “zeroth-order spectrum” in our 75 ksec Chandra grating observation of beta Cru (B0.5 III). Note that this companion (at a separation of $\sim 4''$) has, apparently, never been seen before (though the star has a spectroscopic companion – probably an early B star with a period of about 5 years, implying a separation of about 9 AU (so completely unresolved, spatially, at a $d \sim 108$ pc) for 27 Msun, combined, as well as a visual companion at $\sim 45''$, which is not detected in our x-ray observation – see astro.swarthmore.edu/~mkuhn1/tables.html#45_companion).



Source positions from *Chandra* data (J2000)

companion

RA: 12h 47m 43.803s Dec: $-59^{\circ} 41' 21.265''$

RA error: $0.02''$ DEC error: $0.01''$

β Cru

RA: 12h 47m 43.350s Dec: $-59^{\circ} 41' 19.240''$

RA error: $0.01''$ DEC error: $0.006''$

Separation: 3.983 arc sec
Position Angle of secondary: 121°

Position of β Cru from HIPPARCOS (denoted by the "x" on the above image)

RA: 12h 47m 43.2631s DEC: -59° 41' 19.549"

This offset is 0.73 arc sec

Note: Distance is 108 +/- 7 pc

B, V magnitudes of primary: 1.1, 1.3

HIPPARCOS proper motion

RA: -48.24 mas/yr DEC: -12.82 mas/yr

Note: the HIPPARCOS position has been proper-motion corrected to 2000.0, and the Chandra data were taken at 2002.1. The additional proper motion, over 2 years, is rather negligible.

However, the offset between the position of the primary derived from the Chandra data and the HIPPARCOS position, is a bit large. The formal positional accuracy of Chandra is much worse than HIPPARCOS, but still, the Chandra pointing error of ~ 0.7 arc seconds, is a bit more than 2 sigma, based on empirical determinations of the Chandra pointing accuracy.