

A FULL CYCLE 7 MM LIGHT CURVE OF ETA CARINAE

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It is now well established that the light curve of Eta Carinae has a periodic behavior at all wavelengths, from mm waves to X-rays. These light curves are characterized by the presence of a sharp dip, with duration that depends on wavelength, being longer at X-rays. At mm wavelengths, the dip was detected during the last four cycles, but only during the 2003.5 minimum the light curve was obtained with daily resolution. At that epoch, the 7 mm light curve, obtained with the Itapetinga radiotelescope, in Atibaia, Brazil, followed the X-ray decaying behavior but showed a strong peak, not seen at other wavelengths, before reaching the minimum. This peak was attributed to free-free emission of the 10^7 K optically thick gas located at the wind-wind collision contact surface. Here, we report the 7 mm light curve of the complete 2003-2009 cycle, including the 2003.5 and 2009.0 minima, both obtained with daily resolution. We show for the first time that: (a) the duration of the minima are the same at 7 mm and at X-rays; (b) The peak at 7 mm seen after the minimum is 2003.5 appeared again in 2009.0, with the same phase, duration and shape; (c) two other strong peaks were observed before the 2009.0 minimum, coincident with the peaks observed at X-rays, which supports the previous assumption that they are formed at the wind-wind shock interface.