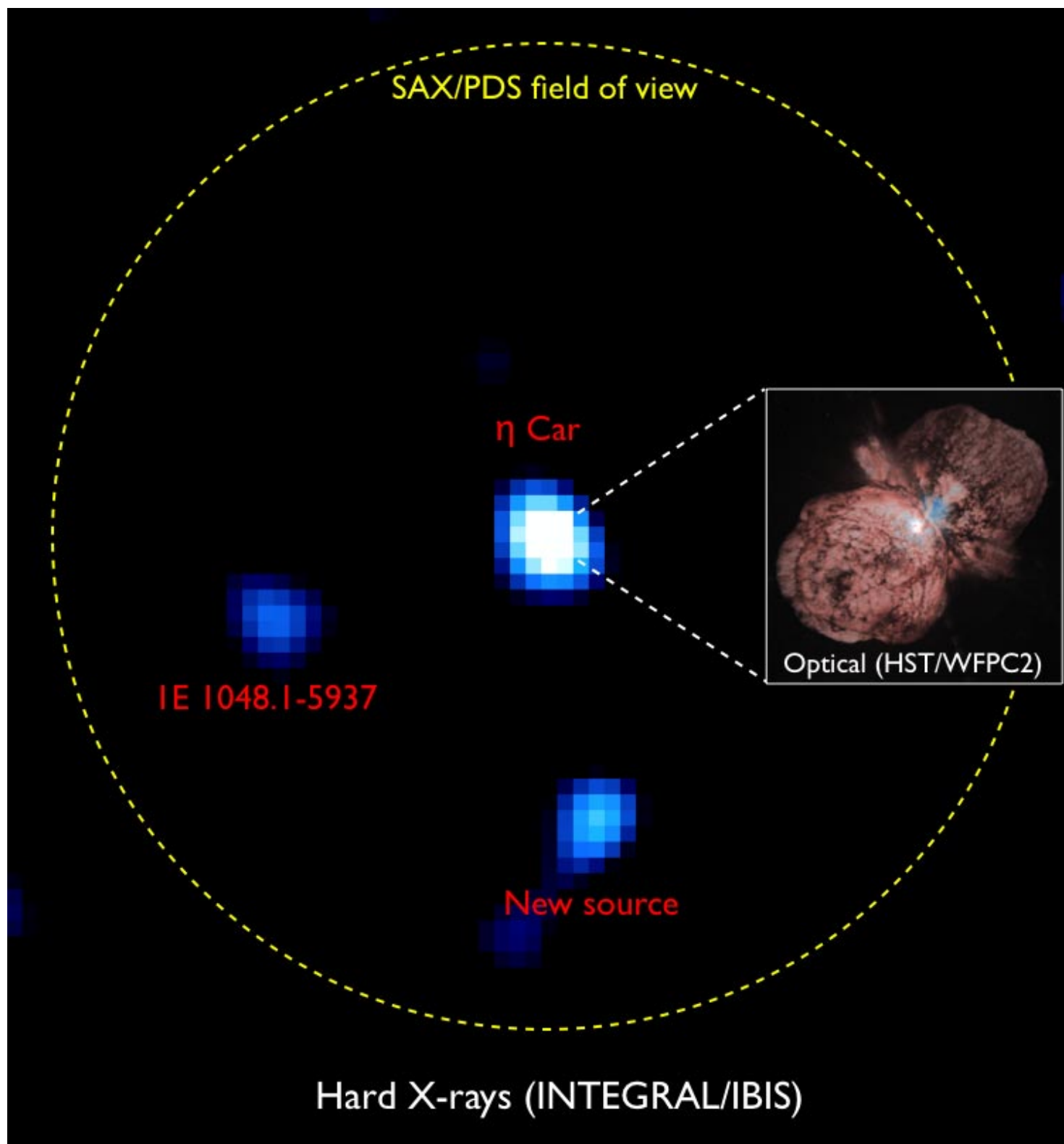


INTEGRAL

Picture of the Month

January 2008



INTEGRAL unveils particle acceleration in Eta Carinae

Eta Carinae is a very peculiar star, once the second brightest in the sky. The large quantities of matter that were ejected during dramatic luminosity variations are now forming an extended nebula (Hubble Space Telescope inset image). Eta Carinae is a binary system, made of two very massive stars orbiting each other. Their powerful stellar winds collide, leading to strong shocks.

Thanks to its improved spatial resolution, ESA's gamma-ray observatory INTEGRAL was able to unambiguously detect for the very first time hard X-ray emission (22-100 keV) from Eta Carinae. This proves that stellar wind collisions can accelerate particles to very high energies.

Based on these observations, it is very likely that Eta Carinae will be detected in the GeV energy range by GLAST and/or Agile.

The yellow circle represents the field of view (and spatial resolution, diameter = 2.6°) of the PDS instrument on-board BeppoSAX, which observed the same field previously. Within this single element of resolution, INTEGRAL detects at least 3 objects : Eta Carinae, the anomalous X-ray pulsar 1E 1048.1-5937, and a previously unknown hard X-ray source.

These results are presented by J.-C. Leyder, R. Walter & G. Rauw, in a paper in press (<http://arxiv.org/abs/0712.1491>) to be published in Astronomy & Astrophysics.