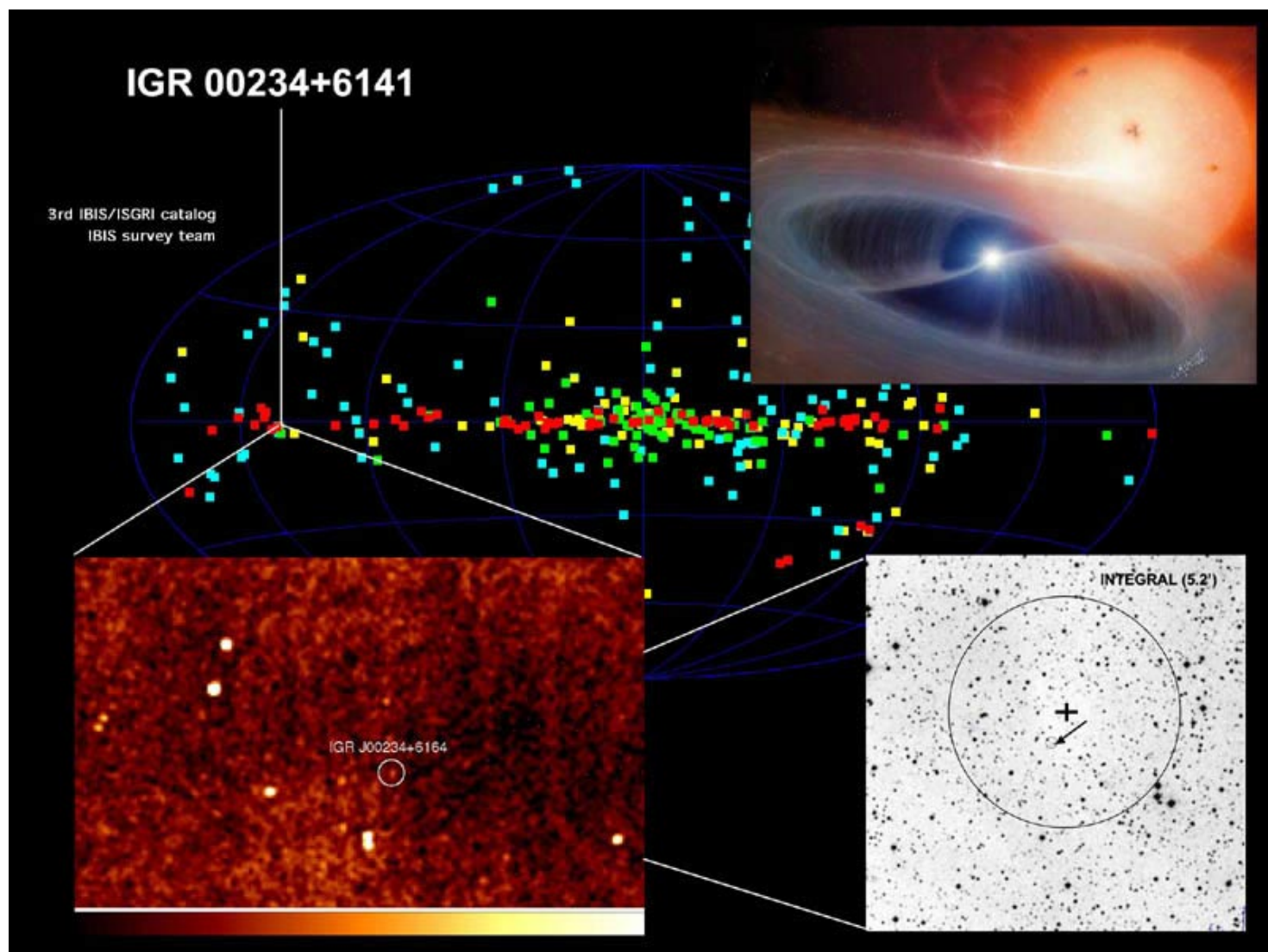


Picture of the Month

September 2007



Accreting white dwarfs, a growing number of new high energy sources

The high energy galactic survey of INTEGRAL has uncovered more than 400 sources emitting at energy above 20 keV. Among them, most are galactic X-ray binaries containing a neutron star or extragalactic active nuclei. But nearly one fourth of these sources are still unidentified. A recent study (Bonnet-Bidaud et al., [A&A 473, 185-189 \(2007\)](#); [arXiv:0706.1433](#)) now confirms that systems containing white dwarfs also contribute significantly to the galactic high energy emission.

The image shows the location of IGR J00234+6141, one of the faintest sources discovered by INTEGRAL with the corresponding mosaic from the ISGRI camera (lower left). A detailed study of the field (lower right) and associated optical photometry and spectroscopy has led to an identification with a cataclysmic variable, a low mass binary system containing a highly magnetized white dwarf, also called 'Intermediate Polars systems' (IPs). The INTEGRAL spectrum is well described by a thermal emission at a temperature of 30 keV. Such high temperatures are achieved at the basis of an accretion column above the white dwarf as depicted in the artist's view above.

About 5% of the INTEGRAL sources have already been identified with IPs and IGR00234+6141 shows that more such faint systems probably exist. As the white dwarfs are much more numerous than the neutron stars, it is anticipated that these systems represent a significant fraction of the unresolved high energy background.

Credits: Service d'Astrophysique(SAp), CEA France; artist view: Mark Garlick