The multi-wavelength picture of Cygnus OB2:

Cygnus OB2 is one of the richest and most massive young open clusters of our Galaxy. It likely harbors 120 ± 20 O-type stars (Knödlseder 2000, A&A 360, 539). X-ray emission from the optically brightest O-stars of this cluster was detected serendipitously with EINSTEIN during an observation of Cyg X-3 (Harnden et al. 1979, ApJ 234, L51). Cyg OB2 contains at least three non-thermal radio emitters (Cyg OB2 #5, #8a and #9; Bieging et al. 1989, ApJ 340, 518) and has been suggested to be related to an unidentified EGRET source (3EG J2033+4118; Romero et al. 1999, A&A 348, 868) as well as an unidentified TeV source (TeV J2032+4130; Aharonian et al. 2002, A&A 393, L37).

We have obtained 6 observations of Cyg OB2 with XMM-Newton (4 in October-November 2004 and 2 in April-May 2007). Each observation has an exposure time of 20 – 30 ks. The spectra of massive stars were fitted with an absorbed (neutral ISM material + ionized wind material) two-temperature mekal model.

Summary: The XMM-Newton data of Cyg OB2 reveal unusually hard (thermal) X-ray spectra for the three non-thermal radio emitters consistent with these objects being colliding wind binary systems. Phase-locked modulations are detected for at least two of them. A wealth of PMS objects are detected that provide constraints on the star formation history of the cluster.