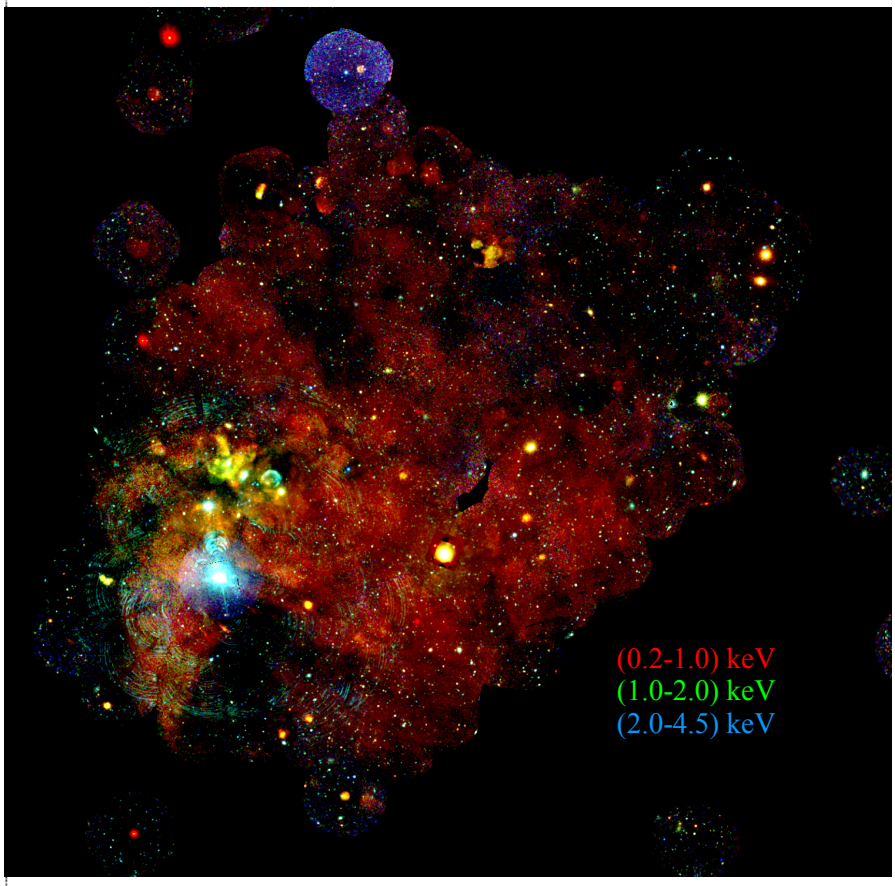
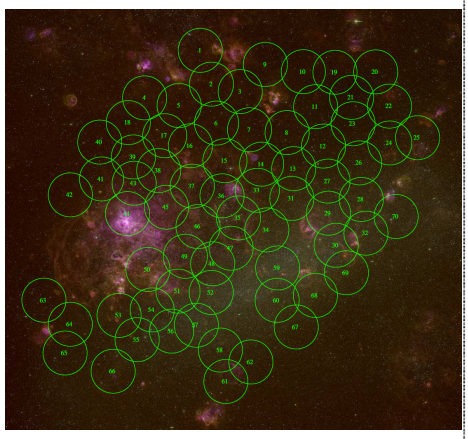
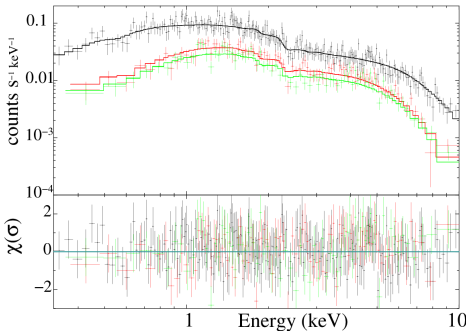
The XMM-Newton survey of the Large Magellanic Cloud: project preview

The XMM-Newton large-program survey of the Large Magellanic Cloud (LMC) combined with archival observations, has homogeneously covered a ~10 square degree area of the LMC down to a limiting point source luminosity of ~2 x 10^{33} erg/s. The LMC offers a unique possibility to investigate the X-ray source population of a galaxy as a whole, including supernova remnants (SNRs), high mass X-ray binaries and super soft X-ray sources in an environment with about half the metallicity of the Milky Way. This project will create a unique data set that allows us to extend the study of SNRs and their properties to fainter fluxes, study the star formation history of LMC as written in the record of compact X-ray sources and to investigate the morphology of the hot interstellar medium in the LMC.

The observations of the 70 fields have recently been completed and we have started to analyse the data. First mosaic images reveal unprecedented details. From a preliminary point source catalogue, we selected the most interesting sources which are currently investigated in detail.







Left: Mosaic colour image of the LMC combining the EPIC data from the XMM-Newton LMC survey (70 observations: ~1750 ks in total) and archival observations. The RGB colour image is composed from three energy bands 0.2-1.0 keV, 1.0-2.0 keV and 2.0-4.5 keV. *Up right:* MCELS image (red: H-alpha, green: [S II], blue: [O III]) from the same region. The green circles indicate the fields (13 arcmin radius) covered by the survey. *Bottom right:* Example of source products of bright point sources: Spectrum of a newly discovered Be/X-ray binary [4] and the residuals for the best fit absorbed power-law, based on observations of the LMC survey.

References:

- [1] R. Sturm et al. A&A 542, A109 (2012)
- [2] P. Maggi et al. A&A 548 L3 (2012)
- [3] P. Maggi et al A&A .546A 109 (2012)
- [4] P. Maggi et al. arXiv:1302.4665 (2013)

G. Vasilopoulos, P. Maggi, F. Haberl, R. Sturm, W. Pietsch