The XMM-Newton view of Plaskett's star and its surroundings.

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XMM-Newton data of Plaskett's star (HD 47129) are used in order to analyse its X-ray spectrum and variability and hence to derive further constraints on the wind interaction in this early-type binary (O6 I + O7.5 I) system. Conventional models fail to provide a consistent fit of the EPIC and RGS spectra. The lines seen in the RGS spectrum have a temperature of maximum emissivity between 0.18 and 1.4 keV. The EPIC and RGS spectra are best fitted by a non-equilibrium model consisting of a bremsstrahlung continuum at 2.2 ± 0.1 keV and a number of independent emission lines. Our tests also suggest that an overabundance in nitrogen by a factor ~6 might be indicated to best represent the RGS spectrum. On the other hand, a short term variability study of the light curves of the system indicates that the X-ray flux of Plaskett's star did not display any significant variability during our observation. This result holds for all time scales investigated here (from a few minutes to about one hour). Combining our XMM-Newton data with ROSAT archival observations, we find however a significant variability on the orbital time scale. If this behaviour is indeed phase-locked, it suggests a minimum in the X-ray flux when the primary star is in front. This might be attributed to an occultation of the colliding wind region by the body of the primary. Finally, 71 other X-ray sources have been detected in the field around Plaskett's star and most of them have a near-IR counterpart with colours that are consistent with those of slightly reddened main-sequence objects. Actually, a sizeable fraction of the X-ray sources in the EPIC images could be either foreground or background sources with no direct connection to HD 47129.

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