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X-raying winds in distant QSOs: the case of the Einstein Cross

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The characterization of AGN feedback is still an open issue. Theories and simulations indicate that AGN-galaxy co-evolution and feedback processes could be established through the generation of gas outflows. These are seen to arise from the innermost regions as powerful winds at sub-pc scales, visible in the X-ray band. We present the results from a systematic analysis of all the available *Chandra* and XMM-*Newton* data (as of October 2018) for Q2237+030, the Einstein Cross, a radio-quiet quasar at $z_Q = 1.695$, quadruply-imaged by a spiral galaxy at $z_L = 0.0395$.
We detect, for the first time, a fast X-ray wind in this object outflowing at $v_{out} \simeq 0.1c$, which seems to be powerful enough to significantly affect the host galaxy evolution ($\dot{E}_{kin} \simeq 9\%\ L_{bol}$). Given the absorption features detected throughout the data, we report also on the possible presence of a faster component of the wind ($v_{out} \sim 0.5c$). Evidence for outflows is found in nine spectra out of the sixteen analyzed, which allows us to give a rough estimate of the wind duty cycle as $\sim 50\%$.

Topic

Active Galactic Nuclei: accretion physics and evolution across cosmic time

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