

Celebrating 20 years of Swift Discoveries



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Probing the progenitors of GRBs with high resolution X-ray spectroscopy: foward NewAthena

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Absorption spectroscopy provides precious information on the environment embedding the GRB, as demonstrated by optical and infrared observations of their host galaxies. The next challenging step is to reach the close region (few parsecs), that carries the direct imprints of the progenitor. However at such distances the medium is highly ionized to the extent that only X-ray measurement can probe it effectively. Furthermore, the strong and variable photoionization front produced by the GRB must be properly modelled, as we did with our TEPID code. In this talk I will focus on the powerful diagnostics provided by the numerous X-ray narrow absorption lines expected to populate the spectrum, and discuss the prospects of observation with XRISM and NewAthena. NewAthena, in particular, will allow to measure lines from several ions from the closest to most distant GRBs, opening the possibility to identify popIII vs popII environments in high- z GRBs.

If time allows I will also discuss the prospects of detecting X-ray imprints, including line emission, from the kilonova of NS mergers both on short and long time scales.

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