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Steep extinction curves in GRBs and quasars

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One of the main tools to study dust grain properties is to measure the extinction curves in sightlines toward stars in the Local Group or extragalactic lighthouses such as quasars, gamma-ray bursts and supernovae. Typically, the extinction curves seen in the extragalactic, interstellar medium can be well-described by extinction curves similar to those observed in the Small and Large Magellanic Clouds and in the Milky Way. Toward a few sources, however, a much steeper extinction curve have been derived most notably that of GRB 140506A which will be the focus of this talk. I will show, using a general parametrization of the extinction, how the reddening in this case compare to those observed in the Local Group and argue that the origin of this can not be reproduced assuming the local reddening laws. I will also show how the global extinction of the host galaxy follow the presciption of a typical Calzetti extinction curve, commonly found to describe star-forming galaxies. The conclusion is then that the steep extinction must be imprinted only on very local scales from the circumburst medium. It is puzzling that the evidence point towards the scenario of a local effect only, since a similar steep reddening is observed in quasars in which the emitting region is in the centre of the host galaxy, where the observed extinction would probe the global galaxy system.

Consider for a poster?

Yes

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