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The star shaped pattern on broken thin sheets NICOLAS VANDENBERGHE, ROMAIN VERMOREL, EMMANUEL VILLERMAUX — We study transverse impacts of rigid objects on a thin elastic sheet made of acrylic. After impact, a transverse wave propagates on the sheet and orthoradial stresses lead to the formation of radial cracks. The result of this fragmentation process is the star shaped pattern frequently observed on broken windows. We investigate the variation of the pattern and in particular the number of radial cracks with impact speed and material properties. The formation of rayed craters by meteorite impacts will be briefly discussed.

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