Cooling in the shade of warped transition discs

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The mass of the gaseous reservoir in young circumstellar discs is a crucial initial condition for the formation of planetary systems, but estimates vary by orders of magnitude. In some discs with resolvable cavities, sharp inner disc warps cast two-sided shadows on the outer rings; can the cooling of the gas as it crosses the shadows bring constraints on its mass? The finite cooling time-scale should result in dust temperature decrements shifted ahead of the optical/IR shadows in the direction of rotation. However, some systems show temperature drops, while others do not. The depth of the drops and the amplitude of the shift depend on the outer disc surface density through the extent of cooling during the shadow crossing time, and also on the efficiency of radiative diffusion. These phenomena may bear observational counterparts, which we describe with a simple 1D model. An application to the HD 142527 disc suggests an asymmetry in its shadows, and predicts a 10 deg