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The role of shadows in Saturn's rings : a CIRS-CASSINI perspective.

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Interparticle mutual shadowing play a crucial role in the energy balance between solar input and ring particle thermal emission. This can be observed in CIRS-CASSINI thermal infrared data of Saturn's rings: the thermal contrast between lit and unlit faces of denser rings is larger, the thicker the ring the lower its temperature, the lower the solar elevation the colder the ring. Inversely, these observed gradients can tell us about the actual volume filling factor and the vertical structure of Saturn's rings. It is yet to understand how. Models of ring thermal emission including interpaticle shadow-hiding, non-axisymmetric geometry, non-zero volume filling factor, finite vertical extension and ray casting provide an inversion tool for this purpose. I will describe the latest CIRS observations and modelling on this topic.