

1143-35-397

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**Andrew K Zeller.** *Higher regularity of the free boundary in the parabolic Signorini problem.*

We show that the quotient of two caloric functions which vanish on a portion of an  $H^{k+\alpha}$  regular slit is  $H^{k+\alpha}$  at the slit, for  $k \geq 2$ . In the case  $k = 1$ , we show that the quotient is in  $H^{1+\alpha}$  if the slit is assumed to be space-time  $C^{1,\alpha}$  regular. This can be thought of as a parabolic analogue of a recent important result in De Silva and Savin. As an application, we show that the free boundary near a regular point of the parabolic thin obstacle problem with zero obstacle is  $C^\infty$  regular in space and time. (Received August 19, 2018)