

Spikes and Plateaus

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Local maxima of functions $f : \mathbb{R}^n \rightarrow \mathbb{R}$ can be classified into spikes or plateaus using a fourth order derivative and nonlocal gradient. We shall provide definitions for spikes and plateaus, and prove classification theorems for the 1-dimensional case, as well as for $n > 1$. We conclude with some applications to the Cahn-Hilliard Equation and reaction-diffusion equations.