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Total Variation Flow and Sign Fast Diffusion in one dimension

We consider the dynamics of the Total Variation Flow (TVF) $u_t = div(Du/|Du|)$ and of the Sign Fast Diffusion Equation (SFDE) $u_t = \Delta sign(u)$ in one spatial dimension. We find the explicit dynamic and sharp asymptotic behaviour for the TVF, and we deduce the one for the SFDE by an explicit correspondence between the two equations.