

## Isothermalisation for a non-local heat equation

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**Abstract.** In this paper we study the asymptotic behavior for a nonlocal heat equation in an inhomogenous medium:

$$\rho(x)u_t = J * u - u \text{ in } \mathbb{R}^N \times (0, \infty),$$

where  $\rho$  is a continuous positive function,  $u$  is non-negative and  $J$  is a probability measure having finite second-order momentum. Depending on integrability conditions on the initial data  $u_0$  and  $\rho$ , we prove various isothermalisation results, *i.e.*,  $u(t)$  converges to a constant state in the whole space.

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