

## MONOTONE SYSTEMS INVOLVING VARIABLE-ORDER NONLOCAL OPERATORS

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**Abstract:** In this paper, we study the existence and uniqueness of bounded viscosity solutions for parabolic Hamilton–Jacobi monotone systems in which the diffusion term is driven by variable-order nonlocal operators whose kernels depend on the space-time variable. We prove the existence of solutions via Perron’s method, and considering Hamiltonians with linear and superlinear nonlinearities related to their gradient growth we state a comparison principle for bounded sub and supersolutions. Moreover, we present steady-state large time behavior with an exponential rate of convergence.

**2010 Mathematics Subject Classification:** 49L25, 35K41, 60J75, 47G20.

**Key words:** viscosity solutions, Hamilton–Jacobi, variable-order nonlocal operators, comparison principles, large time behavior.