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# Long time behavior for a curvature flow of networks related to grain boundary motion with the effect of lattice misorientations

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**Abstract.** The mathematical model of grain boundary motion, including the effect of lattice misorientations, is considered. When time-dependent lattice misorientations are state variables of the surface tension of the grain boundary, to ensure the energy dissipation law one can obtain a curvature flow of networks with time-dependent mobilities. This paper studies the solvability and long-time asymptotic behavior of the curvature flow subjected to the Herring condition, which ensures that the constituent grain boundary surface tensions are balanced at the triple junction.

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