

**EXISTENCE OF A UNIQUE SOLUTION AND
INVARIANT MEASURES FOR THE STOCHASTIC
LANDAU–LIFSHITZ–BLOCH EQUATION**

ZDZISLAW BRZEŹNIAK, BENIAMIN GOLDYS, AND KIM NGAN LE

ABSTRACT. The stochastic Landau–Lifshitz–Bloch equation perturbed by a multiplicative space-dependent noise is studied for a ferromagnet filling a bounded domain $D \subset \mathbb{R}^d$, $d = 1, 2, 3$. We show the existence of strong solutions in the sense of partial differential equation for $d = 1, 2, 3$. Furthermore, in case $d = 1, 2$ we prove the existence of invariant measures and the existence of the unique strong solution in the sense of the theory of stochastic differential equations.