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Control of noise in magnetic multilayers by spin torque ADNAN REBEI, King Abdullah Institute for Nanotechnology — In this work we show that the stability of magnetic nanostructures can be enhanced by time-dependent spin momentum transfer. Building reliable magnetic devices at smaller scales need to address the issue of thermal noise. Using two commonly studied magnetic systems with multiple stable states at zero temperature as examples, we show that periodic spin torques can enhance the stability of the system and hence suppress the noise due to interwell transitions. In the case of weak periodic spin torques, stochastic resonance which is usually associated with ac magnetic fields is also manifested for non-conservative torques. In more complex systems with a relatively low energy barrier, it is shown that high frequency spin torques can inhibit interwell transitions and in effect suppress the telegraph noise due to the switching between neigboring states.

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