Excitation of a Gaussian beam of spin waves in thin ferromagnetic plate

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Lasers emit coherent light beam with very low divergence, what means that an intensity profile of light for a long distance from the emission point in Rayleigh range can be described using a Gaussian distribution. Such kind of beams (so-called Gaussian beams) are well mathematically described and due to its properties widely used in photonics but do not considered in magnonics, so far. Obtaining such beams of spin waves (SWs) in thin, plane, ferromagnetic layer should permit to investigate many new phenomenon in magnonics, to propose new applications and to help to better understand the properties of SW's propagation with its anisotropic dispersion relation.We present results of micromagnetic simulations where we show how to mold the amplitude's distribution of a dynamic magnetic field to obtain a SW beam with the Gaussian profile, optimized properties and capable to propagate for a long distance.