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Magnetostatic micro-resonators. ALEXANDER KOZHANOV, ZACH GRIFFITH, MARK RODWELL, JIM ALLEN, UCSB, Santa Barbara, CA, USA, DOK WON LEE, SHAN WANG, Stanford University, Stanford, CA,, AJEY JACOB, Intell, Inc., WIN COLLABORATION — Small scale magnetostatic wave devices are potentially important for on-chip filters for communication systems and more exotic gated spin wave devices. We describe experimental results that measure transmission and reflection resonances in micron size resonators coupled to coplanar waveguides. Ferromagnetic CoZrTa films were sputtered onto Si wafers covered by SiO_2 and lithographically patterned into stripes and crosses of varying length and width. Magnetostatic waves were excited and detected by overlaying coupling loops patterned as shorted coplanar waveguides. Transmission and reflection S-parameters of fabricated structures were measured in the frequency range (0-50)GHz. Transmission and reflection resonances strongly dependent on the geometry of the ferromagnetic device and applied magnetic field are observed. The results are modeled as standing magneto static waves in micro-resonators. We discuss effect of biasing magnetic fields, approaches to enhanced coupling to the magnetostatic resonators, magnetostatic wave interferometers and magnetization controlled magnetostatic wave switching in junctions. This work is supported by the Nanoelectronics Research Initiative (NRI) - Western Institute of Nanoelectronics (WIN)

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