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Microwave pulse compression utilizing nonlinear spin waves in magnetic thin films¹ PASDUNKORALE JANANTHA, Colorado State University, BORIS KALINIKOS, St. Petersburg Electrotechnical University in Saint Petersburg, Russia, MINGZHONG WU, Colorado State University — Narrow microwave pulses are desired for many microwave applications. In this presentation, a novel pulse compressor is proposed. The pulse compression is realized through soliton-associated techniques which are widely known and used in optics to compress optical pulses. The experiments used yttrium iron garnet thin films as the dispersive nonlinear media to compress microwave pulses. The operational frequency is in the GHz range and could be tuned by varying the bias magnetic field. Compression rates of up to 7 times were observed. Due to the simplicity and tunability of the configuration, the compressor has a promising future for potential applications in radar and telecommunication systems.

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