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Weakly hyperbolic systems by symmetrization

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Abstract. We prove Gevrey well posedness of the Cauchy problem for general linear systems whose principal symbol is hyperbolic and coefficients are sufficiently Gevrey regular in x and either Lipschitzian or Hölderian in time. Such results date to the seminal paper of Bronshtein. Our proof is by an energy method using a pseudodifferential symmetrizer. The construction of the symmetrizer is based on a Lyapunov function for ordinary differential equations. The method yields new estimates and existence uniformly for spectral truncations and parabolic regularizations.

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