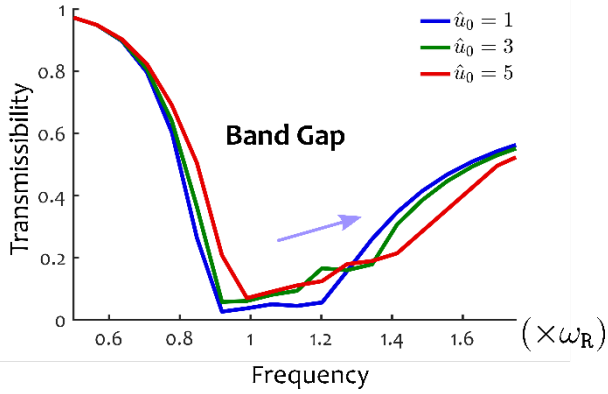
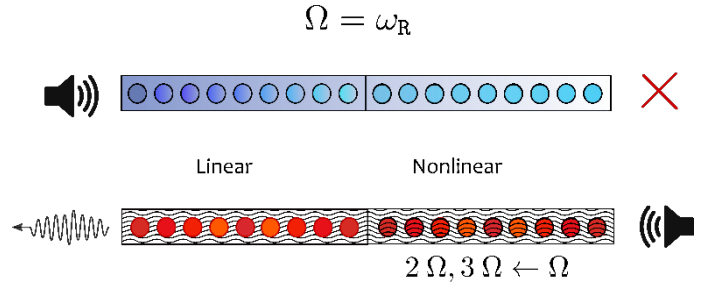


Metamaterials with nonlinear local interaction - Priscilla Brandão Silva

AMPLITUDE-DEPENDENT DYNAMIC RESPONSE



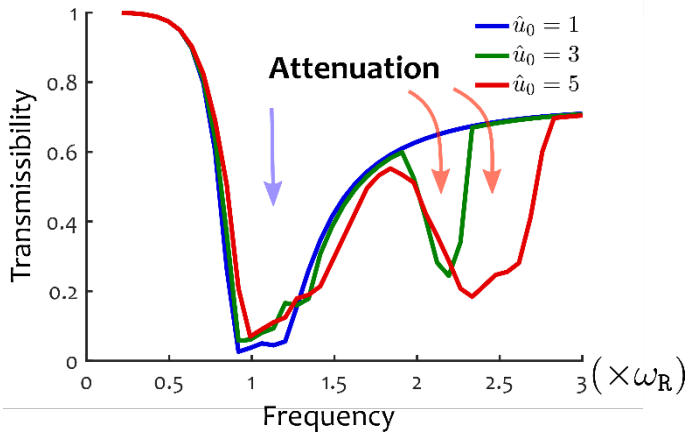
NONRECIPROCAL WAVE PROPAGATION



\hat{u}_0 – Amplitude of excitation, Ω – Excitation frequency, ω_R – local resonance frequency.

Reference: ‘Acoustic metamaterials: Metamaterials for wave control and manipulation by exploring nonlinearity’ by Priscilla B. Silva, Tim van Nuland, Thijs S. van Loon, Valentina Zega, Michael J. Leamy, Marc. G. D. Geers, and Varvara G. Kouznetsova, Innovative Materials, 2018.

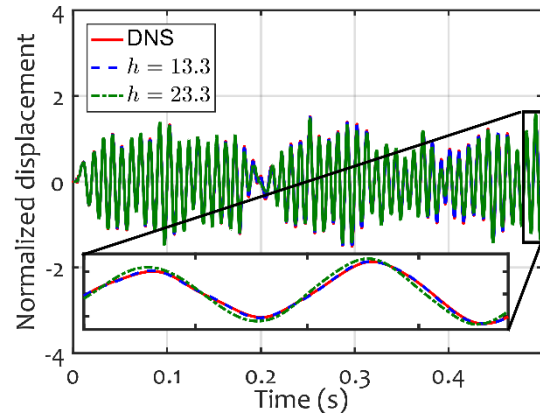
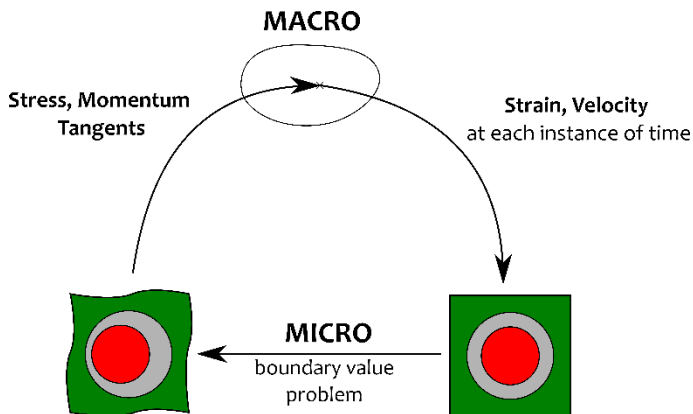
SUBHARMONIC ATTENUATION ZONE DUE TO ENERGY EXCHANGE



\hat{u}_0 – Amplitude of excitation, Ω – Excitation frequency, ω_R – local resonance frequency.

Reference: ‘Emergent Subharmonic Band Gaps in Nonlinear Locally Resonant Metamaterials’ by Priscilla B. Silva, Michael J. Leamy, Marc. G. D. Geers, and Varvara G. Kouznetsova, in submission, 2018.

TRANSIENT DYNAMIC RESPONSE OF NONLINEAR METAMATERIAL VIA COMPUTATIONAL HOMOGENIZATION



DNS – Direct Numerical Simulations, h – Level of homogenization.

Reference: ‘Transient Analysis of Nonlinear Locally Resonant Metamaterials via Computational Homogenization’ by Tim van Nuland, Priscilla B. Silva, Ashwin Sridhar, Varvara G. Kouznetsova, and Marc. G. D. Geers, submitted, 2018.

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