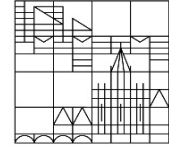


**SFB 1432**

# Colloquium

Universität  
Konstanz



14 Jul 2022  
at 3:15 pm, via zoom



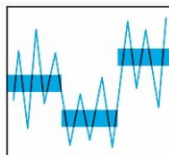
**Dr. Adarsh Venkataraman Ganesan**  
US National Institute of Standards and Technology,  
Gaithersburg (USA)

scan QR code to join



Contact:  
Scheer, 4712

**SFB 1432**



## Phononic Frequency Combs

Phononic frequency combs (PFC) are the mechanical analogs of celebrated photonic frequency combs. These represent a newly documented physical phenomenon in the well researched physical domain of mechanical resonators [1]. The emergence of PFC is mediated by nonlinear modal coupling. Through a series of experiments with mechanical devices, various features of PFC have now been identified. These include drive parameters for comb operation, hysteresis for comb spectrum tailoring and growth, saturation and attenuation mechanisms of combs, and nonlinear sensitivity to physical perturbations.

My talk will describe the physics of phononic frequency combs and will emphasize how these combs could be foundational to the fields of materials science, molecular science and quantum information science.

In that respect, I will also present our first conceptual demonstrations of material combs, molecular combs and active-cavity optomechanics respectively.

The future work will be focused on the fundamental contributions leading to the convergence of phononic frequency combs and these disparate fields.

1. Ganesan, A., Do, C. and Seshia, A., 2017. Phononic frequency comb via intrinsic three-wave mixing. Physical review letters, 118(3), p.033903.

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