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Iceberg resonance and Young's modulus

Monday 1 December 2025 16:00 (1 hour)

Iceberg breakup, calving and frequency is dependent on the Young's modulus of the iceberg. However, in current models of iceberg calving, the effective Young's modulus is essentially guessed by tuning this parameter until the model works. Icebergs have been shown to resonate at certain wave periods with flexural amplitudes that cannot be explained by simple bending suggesting that spectral analysis of the modes of flexural vibration could be used to determine the Young's modulus of an iceberg. A model of coupled iceberg-water motion to determine the resonant periods of an iceberg is presented. This model is used to calculate the Young's modulus of an iceberg using surface strain measurements.

Author: Mr BONHAM, Mitchell

Presenter: Mr BONHAM, Mitchell

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