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Reanalysis of an SEA High-Frequency Vibration Calculation Based on the VTCR

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A new calculation method is presented for the vibrations of slightly damped elastic structures in the high-frequency range, based on the reanalysis of global information to derive more local information. The global information is obtained by using Statistical Energy Analysis (SEA). The local information results from the re-analysis of the SEA data using the Variational Theory of Complex Rays (VTCR). This method can be viewed as a refined calculation (VTCR analysis) following a large-scale resolution (SEA). It is based on a proven 'Saint Venant' high-frequency energy principle which states that the distribution of the energy density does not depend on the way power is injected. This approach enables one to calculate the spatial distribution of the energy density at high frequencies, thus yielding an approximation of the system's behavior which is more accurate than the average constant value given by SEA.

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