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### **LOVE'S FORMULA AND H/V RATIOS**

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The analysis of horizontal to vertical component spectral ratios of ambient vibrations (H/V method) is currently one of the most popular methods to study local site effects. These spectral ratios commonly exhibit a distinct peak which is often empirically found to coincide with the fundamental quarter wavelength "resonance frequency" of the transmission response. However, since ambient vibrations consist mostly of surface waves, the relationship between the spectral ratio (ellipticity) peak frequencies and layer parameters is not straightforward. This is true even for a single layer over halfspace. Therefore, approximative formula for such simple situations would be most helpful. In order to get more insight into this kind of problems, the ellipticity of Rayleigh waves is investigated for simple situations with increasing complexity: homogeneous halfspace with stress-free surface, halfspace with impedance surface and layer over halfspace. It is well-known, that only in the first case the ellipticity is independent of frequency, while the other two cases already yield a complicated frequency behaviour. But it is less known that Love (1911) found a very simple approximation for H/V for an incompressible layer over an incompressible halfspace. We have generalized this fascinating simple formula for compressible media and discuss the quality and range of applicability in a wider context.