

“If the frequency $n\omega$ of one of the harmonics in ... [$f(t)$] ... is close to the natural oscillating frequency of an underdamped system then the phenomenon of **resonance** will arise.

To someone unfamiliar with the theory, it may seem surprising that a practical system may resonate at a frequency much higher than that of the input ... the phenomenon of resonance is important in practice, and it is therefore important that engineers have some knowledge of the theory associated with Fourier series, so that the possible dominance of a system response by one of the higher harmonics, rather than the fundamental, may be properly interpreted.” — G. James, *Advanced Modern Engineering Mathematics*, § 4.5.1.]