

downconversion

Process by which a *photon* with *frequency* ν_1 interacts with a non-linear medium and splits into two simultaneously emitted photons with frequencies ν_2 and ν_3 so that the energy is conserved:

$$\nu_1 = \nu_2 + \nu_3.$$

Note 1: Also known as a parametric downconversion.

Note 2: The efficiency of the conversion process depends on the parametric gain in the non-linear material. This in turn depends on the power of the incident radiation, the photon frequencies, their indices of refraction in the material, and the non-linear “hyper-susceptibility” of the material.

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