photon fluence rate, $E_{p,o}$

Rate of photon fluence. Total number of photons (N_p) incident from all directions on a small sphere divided by the cross-sectional area of the sphere and per time interval. SI unit is m^{-2} s^{-1}. Same as photon spherical irradiance.

Note 1: Mathematical definition: $E_{p,o} = dN_p/(dt\ dS) = d\ H_{p,o}/dt$. If N_p is constant over the time interval and the surface, $E_{p,o} = N_p/t\ S$. $E_{p,o} = \int_{4\pi} L_p\ d\Omega$ with L_p the photon radiance and Ω the solid angle of the beams passing through the given point on the surface.

Note 2: It reduces to photon irradiance E_p for a parallel and normally incident beam not scattered or reflected by the target or its surroundings.

Note 3: This quantity can be used on a chemical amount basis by dividing $E_{p,o}$ by the Avogadro constant, the symbol then being $E_{n,p,o}$, the name "photon fluence rate, amount basis", SI unit is mol m^{-2} s^{-1}; common unit is einstein m^{-2} s^{-1}.

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