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About The Photon Physical Properties SERGEJ REISSIG, EFBR — In [1] the formula for the determination of the photon force was received:$|F| = \frac{hc}{\lambda^2}$ (1). The pressure of the photon can be calculated according to the following formula [1]: $P = F/A$ (2). In [2] the effective area of the photon was defined: $A = \pi\lambda^2$ (3). By using the Eq. (1) together with Eq. (2) and (3) the following equation can be derived:$P = \frac{hc}{\pi\lambda^4}$ or $P = const \cdot \lambda^{-4} = 6.323052\ 10^{-26} \cdot \lambda^{-4}$ (Pa) (4). The thermodynamic analysis has shown that the equation -$P_h V_h = kT$ can be used by describing of the photon thermodynamic condition in such form $P_p V_p = hf$(5). The use of the Eq. (4) and (5) makes the calculation of the photon volume V_p possible: $V_p = hf/P_p = \pi\lambda^3$ (6). The new equations (5,6) were proved with one theoretical procedure: $-dE/dt = -d(PV)_p/dt = hf^2$ (7). Finally, it is possible to calculate the density of the light particle: $V\rho = m = h/c\lambda$ or $\rho = const \cdot \lambda^{-4} = 0.703534\ 10^{-42} \cdot \lambda^{-4}$ [kg/m^3] (8). With the Eq. (4) and (8) one other pressure equitation can be expressed: $P = \rho c^2$ (9). The multiplying the left and right sides of this formula on V by using the Eq. (5) delivers the famous, well-known Einstein formula $E = mc^2$. **[1]** Determination of the Photon Force and Pressure. S. Reissig, The 35th Meeting of the DAMOP, May 25-29, 2004, Tuscon, abstract #D1.102 **[2]** The Photon Power and Stefan-Boltzmann Radiation Law. S. Reissig, Bulletin of the APS, March Meeting 2004, Part I, Montreal, Vol. 49, No.1, p. 255; http://efbr.org/de/publikationen/EFBR%20Publikationen.htm

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