Impossibility of Fission of Photon

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ABSTRACT: One has proved that the fission of photon is impossible. The aspects of the photoelectric effect and the Compton effect have been discussed.

We assume that the rest mass of the photon is equal zero ($m_0 = 0$).
It is impossible to divide a photon into two other photons with the same frequency.
Really, immediately after the division the second photon should have the velocity $v = 0$ in the reference system connected with the first photon. On the other hand, according to Relativity, there should be $v = c$. So there is discrepancy.
In other words, we should have an increase in velocity from $v = 0$ to $v = c$ in the infinitely short time and we should have infinite forces at very small (but nonzero) distances.
More precisely:

$$F = \frac{dp}{dt} = \lim_{\Delta t \to 0} \frac{\Delta p}{\Delta t} = \infty$$

because

$$\Delta p = \Delta(mv) = \frac{1}{2} \frac{h\nu}{c^2} c = \frac{1}{2} \frac{h\nu}{c}$$

and:

$$\Delta t = \varepsilon \to 0$$

The infinite forces and potentials are known (the infinite superconducting potential of confinement of quarks, the gravitational potential of inertia, electromagnetic potentials etc.), but they are infinite at infinite distances.

There can’t be the repulsing Coulomb force (potential) because photons haven’t any charge with exception of mass. Next, both positive masses attract each other and don’t repulse.
However, the spin charge is equal $s = 1$ what means the condensation so again the attraction.
After the fission each photon should have the spin $s = \frac{1}{2}$. But photons must have the spin $s = 1$, so there is again the discrepancy. This fact decides in the case of interactions yet not discovered.
The problem appears if the spontaneous fission of photon into two photons with different frequencies is possible.
Then we would have:

$$h\nu = h(\nu x) + h\big(\nu(1 - x)\big) = x(h\nu) + (1 - x)(h\nu)$$

If $x = \frac{1}{2}$, we would have the earlier case, so there is the discrepancy.
There is another situation if the photon transfers its energy to a particle with the huge mass. It may be the whole energy (the photoelectric effect) or part of this energy (the Compton effect). Then the momentum is taken by this mass.