

# Proposal: Field photonic drive

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## Introduction

This proposal of a field photonic drive starts with a question:

Does the momentum of a photon is increased while in an transparent medium with higher reflective index?

While in an transparent medium with higher reflective index the photon frequency is increased accordantly and then the momentum should increase, because momentum is frequency multiplied by Planck's constant.

## Description

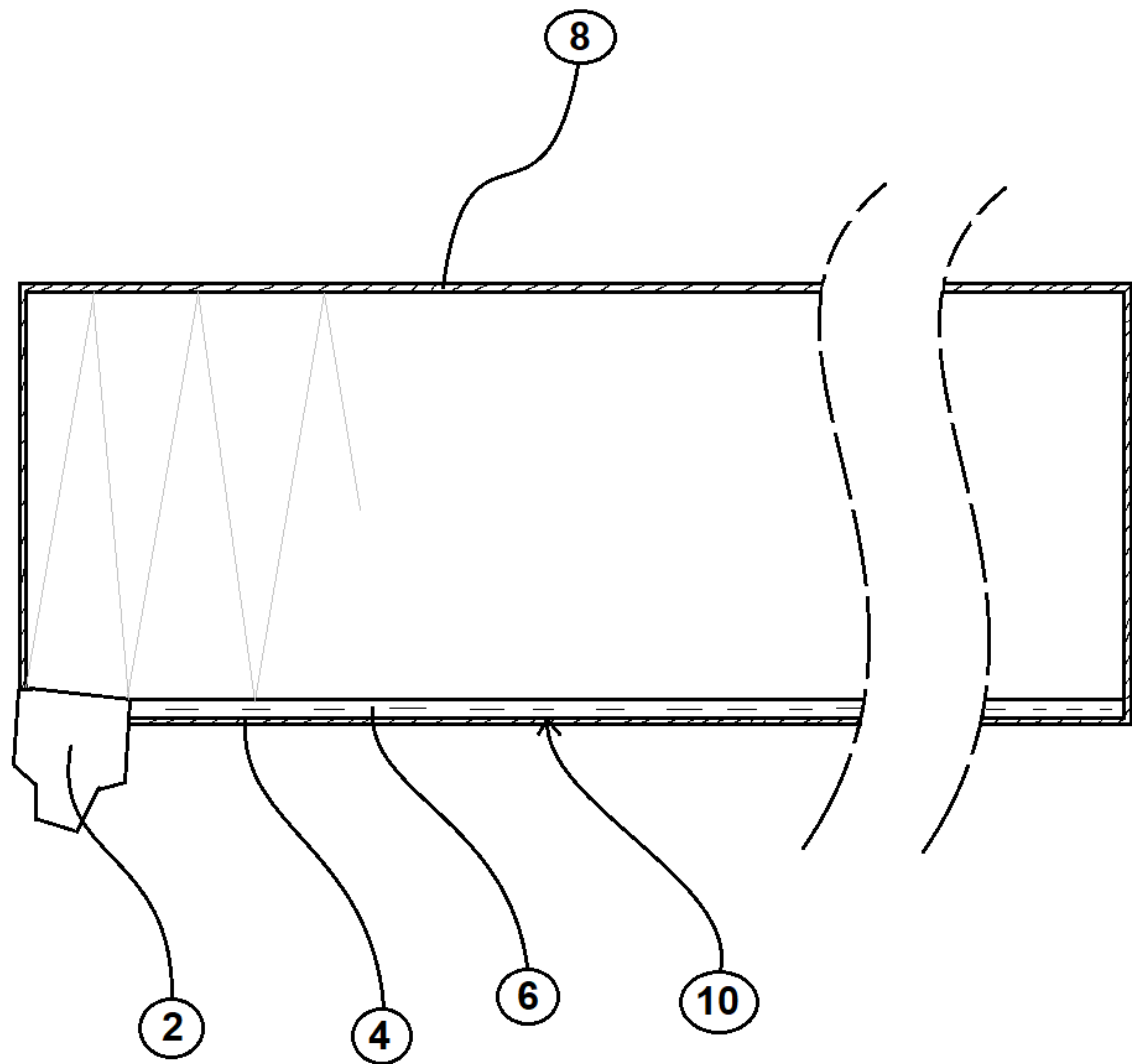


Fig. 1

- 2. Light source
- 4. Reflective surface
- 6. Transparent medium
- 8. Naked mirror
- 10. Medium mirror

It has as the main components two parallel mirrors and light source ( Fig.1 p.2 ). The parallel mirrors are: The naked mirror ( Fig.1 p.8 ) that is polished metal.

The medium mirror ( Fig.1 p.10 ) is formed from of sheet of transparent medium ( Fig.1 p.6 ) that is coated with reflective metal ( Fig.1 p.4 ).

The light source ( Fig.1 p.2 ) must have an narrow beam and is aimed in an shallow angle with the perpendicular on the plains of the parallel mirrors for maximizing the number of bounces of the light between the parallel mirrors.

### Working principle

The light source will emit light that bounces between the parallel mirrors, those mirrors will experience a photon pressure between them. Because of the influence of the medium on photon momentum the pressure between the mirrors will not be equal and that will create thrust.

The radiation pressure for a reflective surface is two times irradiance over the speed of light.

Taking in account the difference in pressure, the formula should be:

$$P_{net} = P_{(mediummirror)} - P_{(naked mirror)} = 2 \frac{I_f(n-1)}{c}$$

where: P is pressure

$I_f$  is Irradiance

n is refractive index

Using different materials for medium, the pressure can start with  $I/c$  for glass and  $8.9 \cdot I/c$  for germanium.

One of the advantage of using this field photonic drive vs an photon rocket is the recycling of the light and depending of the round trip efficiency of the material combination will be 10 times for 90% efficiency, 20 times for 95% or 100 times at 99% than the thrust of the photon rocket.

A point of concern is about the naked mirror (Fig.1 p.8) material choice and should be made from an material that doesn't naturally form an oxidative transparent layer like platinum, gold, silver.

Material combination can be: for visible light, platinum or silver and for medium from glass to diamonds; and for infrared light, gold and germanium for medium.

## Closing

This field photonic drive if functional will apparently will break laws of physics because is an propulsion system without an reaction mass. But, also you can think of it as taking advantage of two points in space with slightly different proprieties and uses photons as a lever.