

Michelson-Morley experiment and the law of conservation of momentum

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An installation, whereon Michelson and Morley carry out experiments, was a single structure consisting of a Michelson interferometer is mounted on a platform (floating in mercury to allow smooth rotation).

If it is assumed that:

- Ether (homogeneous environment) is moving with constant speed and direction relatively the installation;
- Light - is elastic vibrations propagating in the ether;
- Ether does not interact with the structural elements of the installation;
- Light, from its source in a Michelson interferometer, interacts with structural elements of the interferometer (mirrors, plates ...);
- Spatial changes in the structure of ether, representing the elastic vibrations - the light, occur only in a limited volume surrounding the installation (ie without installing any light source not included);

then the installation and the ether surrounding it can be regarded as conditionally closed system, which must be satisfied the law of conservation of momentum (as the outside air setting the momentum of ether does not change outside the limits of installation).

When moving of rays of light inside the Michelson interferometer it take place the interaction of light with structural elements of the installation, which

lead to the transmission of momentums from the light to the structural elements of the installation, and vice versa to the transmission of momentums from the installation (through its structural elements) to light.

The interaction of light with the structural elements of the installation leads to their displacement and deformation, but proceeding from the law of conservation of momentum, center of mass of the examining closed system in which the light must also be included, can not move acceleratedly in space, and also it is impossible to distinguish of phases of light, split into rays.

In the Michelson-Morley installation the rotation of the platform with the interferometer installed on it can not lead to a shift of the interference fringes, as otherwise it would be a violation of the law of conservation of momentum.

Thus, the negative result of the Michelson-Morley experiments can not serve as confirmation of the lack of ether.