THE ROTATING DISC EFFECT

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ABSTRACT. It is demonstrated that it is possible to obtain a significant small-scale gradient of spatial properties using the rotating disc.

1. Introduction

The study of the rotating disc effect on the displacement of interference fringes produced by the interferometer is discussed in this paper. The preliminary results of the study were described earlier by Shahrukhanov (2013ab). Later on the 4.5 kg disc was substituted for the 2.5 kg disc to achieve greater fringe shifting effect.

The schematic representation of the interferometer is shown in Figure 1. The metal tubes in which the interferometer was housed were removed from the scheme due to decreased amplitude of vibrations caused by the disc rotation. To do so the whole device (the disc with drive motor) was housed within metal casing wrapped with cloth tape to ensure the vibration disturbance elimination.

The interference fringe displacement effect is observed when the disc is positioned so that its rotation axis coincides with the interferometer arm M2-M3. When the disc is positioned between the interferometer's main arms M2-M3 and M1-M3, the fringe shifting effect is not observed within the measurement accuracy. The maximum fringe displacement is above 2000 angstroms with the disc's angular momentum of about 5 kg·sq.m/sec.

Figure 2 shows the time dependence of the angular momentum and interference fringe displacement value (in angstroms).

A physical model describing the phenomenon nature was proposed by me for publication in 1984. The model was based on two principles of inertia:

a) the inertial forces result from interaction of mass trajectories (the disc is considered to be an aggregate of point masses);

b) the effective values of inertial forces are arranged in the scalar field.

The same principles are deemed general ones for the nature of magnetic field.

2. Conclusion

The described model investigation allows to draw a conclusion that in principle it is possible to find the gradient of inertial interactions. In the presented model the speed of light is thought as the index of spatial properties at a given point.

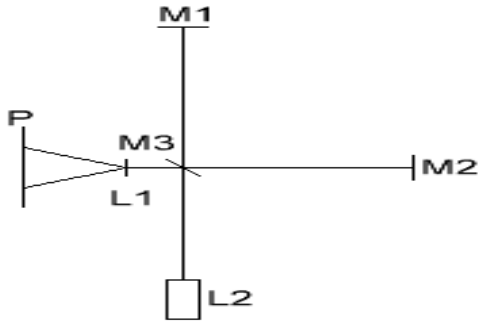

Figure 1: The schematical representation of the interferometer. The legend: M1, M2 – mirrors, M3 – a beam-splitter, L1 – a lens, L2 – a laser, P – the screen onto which the interference pattern is projected.

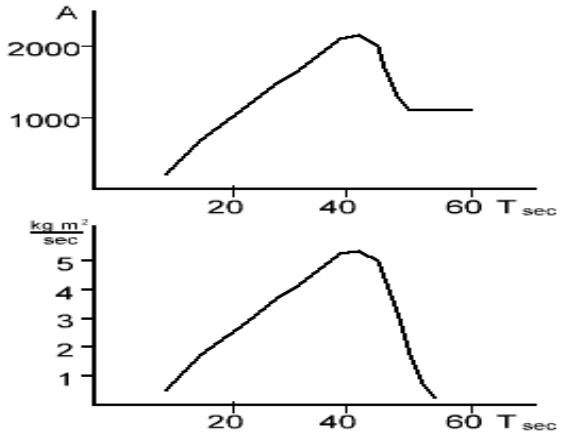

Figure 2: The time dependence of the angular momentum and interference fringe displacement value.

References

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