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## Pedagogical implications of semi-classical description of electrostatic fields

*Thursday 8 September 2022 15:50 (20 minutes)*

It is well-known that in certain contexts, there are striking analogies between light rays in geometrical optics and electrostatic field lines. For example, in the method of images, the image charge distribution plays the role of the virtual image in a mirror. It is also known that like optical refraction, the electrostatic field lines change direction as they are incident on a medium of different dielectric constant. Analogies like these are very illuminating, but often they are not explored in depth, since no new interesting ideas are expected to emerge from them. In this presentation, I will show that in fact, interesting physical ideas do emerge when one tries to explain such “optical” behaviour of electrostatic field lines. This is based on a semi-classical model of electrostatics that was presented in ICNFP 2020 to resolve the nonlocality problem of Aharonov-Bohm effect (Physica Scripta Vol. 96 084011 (2021)). It is hoped that this work will expand the horizon of the physics curriculum at the university level.

### Is this abstract from experiment?

No

### Name of experiment and experimental site

N/A

### Is the speaker for that presentation defined?

Yes

### Details

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### Internet talk

Yes

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