

Referees report on the paper by Mahmoud E. Yusif, ref. No. HP-173:

I have tried to read this paper as carefully as possible, in the original as well as in the revised version, the latter being slightly easier to read, mainly because of the improved typography. I am not able to recommend the paper for publication.

It seems to me that the present paper is questioning the basic, hitherto accepted, expression and interpretation of the magnetic (Lorentz) force on charged particles as exerted by a magnetic field. Now, this is a rather ambitious project: to justify it one must be able to point to shortcomings of the existing model and its interpretation, remedy these, but do it in such a way that the cases where the previously accepted models agreement with observations are retained. It is for instance a result demonstrated to all necessary accuracy that a stationary magnetic field can not energize a charged particle, since the force and the displacement are perpendicular to each other. Nevertheless, the author seems to claim in the beginning of Sec. 1:3 that work IS done! Also, I fail to find a single reliable observation, which cannot be explained by existing models for the magnetic force. The fig.1 used for discussing this problem is to me quite incomprehensible. It might be (I am not so certain) that there are some discrepancies between the energetics of charged particles as observed in the Earth's near space, and some simplified models involving chock acceleration, as argued in the introduction. If so, the shortcomings are to be found in our understanding of the rather complicated dynamic processes in the plasmas of our solar system, and not in a basic physical law, which is experimentally verified to high accuracy.