
Subject: Re: Are the field lines the trajectory of a particle with mass M ?

Posted by [James Kuyper](#) on Mon, 15 Mar 2004 22:45:17 GMT

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Surendar Jeyadev wrote:

>

> In article <405481EF.6359E0DA@saicmodis.com>,

> James Kuyper <kuyper@saicmodis.com> wrote:

...

> G. K. Batchelor. There are three kinds of lines you need to worry about.

>

> 1. Streamline: A line whose tangent is everywhere parallel to the

...

> 2. The Path Line (or simply Path): This is just the path traced by a

...

> 3. The Streak Line: The line along which lie all those fluid elements

I should have specified that I was talking about steady-state fluid flow. I was trying to point out one case where field-line and trajectory were the same thing, before explaining why that's not true in general.

...

> Electrodynamics should have some coverage. These problems are much more

> fun when relativity comes in :-)

Especially when you throw in general relativity in strong gravitational and electrical fields. :-) Geons are a particularly extreme example: a ball made up entirely of photons which are moving in circles because, and only because, of their mutual gravitational attraction.
