

# Re: Existence of (co)product

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- *From:* "Arturo Magidin" <[magidin@xxxxxxxxxxxxxxxxxxxx](mailto:magidin@xxxxxxxxxxxxxxxxxxxx)>
  - *Date:* 13 Feb 2006 11:49:17 -0800
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Marc Olschok wrote:

Arturo Magidin <[magidin@xxxxxxxxxxxxxxxxxxxx](mailto:magidin@xxxxxxxxxxxxxxxxxxxx)> wrote:

[.snip.]

Each prime field is initial in Field if you allow the zero map:[...]

Certainly not, because in this case there would be two different maps  $0: F \rightarrow F$  and  $\text{id}: F \rightarrow F$  for every such field.

Quite right; my bad.

It is easier to consider for a fixed characteristic  $p$  the category  $\text{Field}_p$  of all fields with that characteristic. Then the respective prime field is initial in that category.

If we do not allow the zero map.

Arturo Magidin, sans .sig

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