

Re: Order of indices in tensors...

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"Flip Tomato" <flipt@stanford.edu> wrote in message news:<cgbmkh\$2rv\$1@news.Stanford.EDU>...

> *Hello--I'm doing some intro-GR (using Carroll's new book), and I am confused*

> *about a subtle point:*

>

> *What is the significance of the order of indices in a tensor? I understand*

> *that the convention is for upper indices to sum with lower indices and vice*

> *versa when the tensor acts on the appropriate object, however, what is the*

> *significance of having the upper index listed first or the lower index*

> *listed first (horizontally)?*

>

> *Thanks,*

> *Flip*

> *flipt (at) stanford*

As a general rule: Order matters unless proven otherwise.

That could be contractions or symmetries as others have pointed out,

or more subtle stuff, but unless proven otherwise order matters, even

between "up" and "down" indices!

$A_{\mu}^{\nu} = g_{\mu\lambda} A^{\lambda\nu}$

$A^{\nu\mu} = g_{\mu\lambda} A^{\nu\lambda}$

so unless A is symmetric you need to keep track!

frank