Re: Field of View and Magnfication calculations

Source: http://sci.tech−archive.net/Archive/sci.astro.amateur/2009−04/msg00765.html

- *From*: Eugene <eugenhughes@xxxxxxxxx>

- *Date*: Mon, 20 Apr 2009 05:31:05 −0700 (PDT)

On Apr 20, 8:07 pm, wsnel...@xxxxxxxxxxx wrote:

> On Apr 19, 8:52 pm, Eugene <eugenhug...@xxxxxxxxx> wrote:
>
> > On Apr 20, 8:21 am, Dave Typinski <möb...@xxxxxxxxxxxxx> wrote:
> >
> > > Eugene <eugenhug...@xxxxxxxxx> wrote:
> >
> > > > What has the thin lens formula got to do
> > > > with it. I'm
> > > > inquiry about the formula for small angle
> > > > where
> >
> > > > theta subtended by object = arctan (object
> > > > size/distance)
> >
> > > > then apparent field of eyepiece like TV
> > > > Plossl 50 degrees
> > > > divided by the theta is equal to the
> > > > magnification.
> >
> > > > Does this magnification calculations based
> > > > on the theta
> > > > and Plossl field accurate when the object is 4

> meters
> away, 8 meters away, at infinity?

> The calculation is accurate everywhere because for any given
> object of
> interest−−say, a meter stick−−theta will change depending
> on the
> object's distance from the observer.
> −−
> Dave

> > But in using a compound system with primary and secondary
> > mirrors. Sometimes the focal length changes because you
> > are adjusting the rear visual back distance from the
> > secondary to focus close. Or is the calculation entirely
> > independent of the focal length of the system??

> The focal length of a compound telescope will change if you change the
> distance between the primary and secondary in order to focus the
> scope. Usually the primary mirror is what moves but some small Maks
> and large RCs move the secondary in order to focus. For the purposes
> of this exercise only the eyepiece should be moved in order to focus.
>
> The focal length of the system is defined by the image distance for an
> object at infinity, in which case:
>
> 1/infinity + 1/image distance = 1/focal length
>
> where we see that image distance and focal length are now equal.− Hide quoted text −
>
> − Show quoted text −

I know. If one change the distance between eyepiece
focal plane and secondary by moving the primary,
the focal length of the system changes. No problem
with that. But in determining the magnification, can
one simply uses the following method:

theta subtended by object/2 = arctan (1/2 object size/distance)

then apparent field of eyepiece like TV Plossl 50 degrees
divided by the theta is equal to the magnification.

Now the main question is, would the value of the above
solutions equals the actual system focal length divided by

the eyepiece focal length?

E
.