Re: SCT Primary Mirror and Wavefront Aberrations

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From: matt (*mariusrf_at_bellsouth.net*)
Date: 07/09/04

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William Hamblen wrote in message ...
>On 2004−07−08, matt <mariusrf@bellsouth.net> wrote:
>
>> I'm having a hard time locating any reference dealing with analysis of
>> wavefront aberrations in SCT type scopes. More specifically, how are the
>> primary mirror and corrector wavefront errors contributing to the scope
>> overall aberrations, taking into account the x5 magnifying secondary ?
>
>Telescope Optics by Rutten and van Venrooij, Willmann−Bell 1988, has a
>chapter on SCTs. Correction for the spherical aberration of the spherical
>primary is done by the corrector plate _and_ the secondary mirror.
>

you are correct, it has such a chapter .
The problem with that is that there is no analytical expression derived for overall SCT aberrations due to primary mirror aberrations or better said defects (aberrations could exist due to design, defects are differences from designed shape) . I don't see how the corrector plate could in any way influence the primary mirror wavefront errors other than SA . My original question, regarding overall errors, was referring to the OTHER manufacturing errors , not to SA which in theory is compensated for by the corrector and aspheric secondary . Say the primary is not that spheric , due to its manufacturing , deviating from spheric by x . Say the primary also has a certain amount of peaks and valleys with a certain RMS or P−V value . How does the scope overall aberrations change , in a quantitative way , that was the sense of my question .

Short of modelling the scope in Oslo, for which I need some more reading, I couldn't find any written reference to this question .

thanks,
matt tudor