OBSERVATIONAL APPROACH AND PERSPECTIVE

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Paper not received.

DISCUSSION

Goldberg: Well you did not cover more than half of my planned talk! (laughter). Let me comment on interferometric techniques, in particular speckle imaging which you mentioned. Doing speckle imaging with the largest telescopes now available will not give you better than the theoretical resolving power of the telescope. With a 4m telescope that is about 30 marc sec in the visible. That happens to be the radius of the supergiant Betelguese. So you are not going to achieve much with speckle imaging on these stars. One technique which has not been adequately exploited is that of lunar occultation which can give much better angular resolution than speckle, of the order of 2-3 marc sec. By using suitably chosen filters it may be possible to see structure on the disks of stars.

Vaiana: I was aware of this limitation but I was speculating on the very distant future with the availability of very large telescopes. With regard to the second possibility, it might be very difficult to do speckle of accretion disks in binaries because of the high luminosity of one of the components. In the case of the M stars the situation might be more favourable.

Worden: I do not wish to disagree with Dr. Goldberg too much but it will be possible to use speckle interferometry in the next few years. It has been possible both in the work of Labeyrie and in Arizona to phase two spatially separated mirrors. It is possible to increase resolution in this way. An even more interesting possibility is the suggestion of Jacques Becker (?) which is a little related to Vogt and Penrod's work (this volume), i.e. speckle imaging in absorption lines. As you pass through the

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absorption line with rotation you can get a one-dimensional image of the star. He believe he can get very interesting information, even on some of the dwarf stars. There is also a proposal from Harvard to build a space interferometer which would give direct images. In practise these ideas may run into difficulty but theoretically they should work.

de la Reza: (part of question lost) ... they have low lives, low mass rates and no specially peculiar abundance. Perhaps the abundance may be important in order to have a measure of the convection.

Vaiana: Yes, this need to be pursued with great care. I do not think we have measured mass loss from those systems and so it does not appear that they have very large mass loss. Given that they are so active both in the "quiescent" and flaring states I think it is worth re-examining these objects in the light of what we are learning in the UV and X-ray ranges.

Walter: I would like to put in a plug for the eclipsing binaries because they give you an opportunity to see surface structure as one star passes in front of the other. All you need is adequate time resolution. As we showed with Einstein with 500 sec resolution sizes of order 10^9cm in stellar coronae have been resolved. I believe it is possible to do 1 or 2 orders of magnitude better. This is very promising for the very near future in studying stellar chromospheres and coronae.

Vaiana: You need high photon counts for this so it can only be done for bright sources or with large aperture detectors.

Walter: Well although Einstein is a small aperture instrument the Space Telescope will be able to do much better.

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