

## THE ANGULAR DIAMETER AND EFFECTIVE TEMPERATURE OF THE LITHIUM-RICH K GIANT HD 148293 FROM THE CHARA ARRAY

ELLYN K. BAINES<sup>1</sup>, HAROLD A. MCALISTER<sup>2</sup>, THEO A. TEN BRUMMELAAR<sup>2</sup>, NILS H. TURNER<sup>2</sup>, JUDIT STURMANN<sup>2</sup>, LASZLO STURMANN<sup>2</sup>, P. J. GOLDFINGER<sup>2</sup>, CHRISTOPHER D. FARRINGTON<sup>2</sup>, AND STEPHEN T. RIDGWAY<sup>3</sup>

<sup>1</sup> Remote Sensing Division, Naval Research Laboratory, 4555 Overlook Avenue SW, Washington, DC 20375, USA; ellyn.baines@nrl.navy.mil

<sup>2</sup> Center for High Angular Resolution Astronomy, Georgia State University, P.O. Box 3969, Atlanta, GA 30302-3969, USA

<sup>3</sup> National Optical Astronomy Observatory, P.O. Box 26732, Tucson, AZ 85726-6732, USA

Received 2010 December 6; accepted 2011 February 24; published 2011 April 4

### ABSTRACT

We measured the angular diameter of the lithium-rich K giant star HD 148293 using Georgia State University's Center for High Angular Resolution Astronomy Array interferometer. We used our measurement to calculate the star's effective temperature, which allowed us to place it on an H-R diagram to compare it with other Li-rich giants. Its placement supports the evidence presented by Charbonnel & Balachandran that it is undergoing a brief stage in its evolution where Li is being created.

**Key words:** infrared: stars – stars: fundamental parameters – stars: individual (HD 148293) – techniques: interferometric

Table 3  
HD 148293 Stellar Parameters

| Parameter                                               | Value                  | Reference                       |
|---------------------------------------------------------|------------------------|---------------------------------|
| [Fe/H]                                                  | +0.08                  | Cayrel de Strobel et al. (1997) |
| V magnitude                                             | 5.25                   | Mermilliod (1997)               |
| K magnitude                                             | $2.83 \pm 0.11$        | Neugebauer & Leighton (1969)    |
| $A_V$                                                   | 0.04                   | Famaey et al. (2005)            |
| BC                                                      | $0.35 \pm 0.10$        | Alonso et al. (1999)            |
| $F_{\text{BOL}}$ ( $10^{-8}$ erg s $^{-1}$ cm $^{-2}$ ) | $28.9 \pm 2.8$         | Calculated here                 |
| $\theta_{\text{UD}}$ (mas)                              | $1.439 \pm 0.059$ (4%) | Measured here                   |
| $\theta_{\text{LD}}$ (mas)                              | $1.480 \pm 0.060$ (4%) | Measured here                   |
| $R_{\text{linear}}$ ( $R_{\odot}$ )                     | $14.3 \pm 0.6$ (4%)    | Measured here                   |
| $T_{\text{eff}}$ (K)                                    | $4600 \pm 100$         | Brown et al. (1989)             |
| $T_{\text{eff}}$ (K)                                    | $4460 \pm 141$ (3%)    | Measured here                   |