$\widetilde{2.5}$
??
α
1
d =
197±
45
2008).*Ithasalimbdarkenedangulardiameterof*
±0.15
2009*whichmeansthatitsubtendsthelargestangulardiameterofanystarinthenorthernskyapartfromtheSun.Itisbyfarthe*
*formationregionOriOB*1[**?**, *see, e.g.,*]]*hoogerwerf*2000, *andwasaspectraltypeO*9*Vstarwhileonthemainsequence, wherei*
20 $M_{\odot}$
?
18$M_{\odot}$
$^{-2}$
2×
$10^{-5} g_{\odot}$
10−
17
$^{-1}$
$\widetilde{3}\times$
$10^{-6} M_{\odot} yr^{-1}$
2001.*Likemostlate*−
typeevolvedstars, Betelgeuse'sterminalwindvelocity$_{\infty}$
v_{esc}
??
α
α
0.45 ± 0.4
^{hms}
$^{\circ\prime}$
$^{-1}$
$^{-1}$
π 5.07 ± 1.1
197 ± 45
$M_{\star} M_{\odot}$ ~ 20
$M_{\star} M_{\odot}$ ~ 18
θ_{UD} 43.33 ± 0.04
θ_{LD} 44.28 ± 0.15
$R_{\star} R_{\odot}$
T_{eff}
$_{10}\, L_{\star}/L_{\odot}$ 5.10 ± 0.22
$_{10}\, g_{\star}$
$^{-2}$
v_{rad}
$^{-1}$
v_{esc}
$^{-1}$
v_{∞}
T_{wind} < 4000
$\dot{M}_{\star} M_{\odot}^{-1}$ 3×10^{-6}
$H_{\star} R_{\star}$
[] 0.05 ± 0.14
$B_{\star}$ $-3 \rightarrow +2 \pm 0.5$
$\cdots$
$\cdots$
$\cdots$
1213 6 ± 1
1617 525 ± 250
1618 700 ± 300
$\widetilde{17}$
1998, *whichimpliesthatitisprobablyexperiencingverylimitedactionofasolar*−
*likedynamo.Thisrotationperiodisinstarkcontrasttotheequatorialsolarrotationratewhichisjust*24.5*days.Itslargeradius*
950 $R_{\odot}$
$H_{\star} \sim$
0.01 $R_{\star}$
?
2007.[**?**]*haverecentlymonitoredBetelgeuseoverathreeyearperiodusinghighresolutionspectropolarimetry, andfindalong*
±0.5
+2±
0.5
$T_e \sim$
8000
1982, *hartmann*1984.*Infact, highresolutionUVphotonscatteringimagingwiththeHSTpartiallyresolvedthehotchromosph*
1996.*However,* [**?**]*spatiallyresolvedBetelgeusewiththe'old'VLAat*5*differentwavelengthsandshowedthatthemeanelectr*
2000−
4000
??
?
<
2500
?
?
template/3/*lim*1.*ps*[*trim* = 0*pt*20*pt*0*pt*0*pt, clip, scale* = 0.35]/*home/eamon/thesis/thesis*$_t$*emplate*/3/*lim*2.*ps*[*VLAspati*
$\widetilde{5.4}\times$
10^{-4}
2001, *bowers*1987, *andlowmolecularabundancesknapp*1980, *huggins*1987, *jewell*1991, *lambert*1978.*However, itisknownto*
0.1$R_{\star}$
$\widetilde{1500}$
$\widetilde{1.4} R_{\star}$
$\widetilde{2}$

30
5−
15
1.04−
2.17μm
$R_\star$
$R_\star$
$_2$009.$These plumes have been attributed to the action of giant convection cells. Thermal infrared VLT (\lambda =$
8−
20μm
$100 R_\star$
2.5
$_2$011, $while Herschel images show a chaotic dust distribution far out in the circumstellar envelope, i.e., beyond_\star$
>
15
$_2$012.$A conclusion that can be drawn from these studies is the constant presence of inhomogenities in the circumstellar environ$

$_2$006$is a millimeter interferometer located at Cedar Flat in eastern California at an elevation of 2200\,m. The array consists of$
115$GHz (3mm) and$215−
270$GHz (1.3mm). Eight additional 3.5m antennas known as the Sunyaev−
Zel'dovich Array (SZA) can also be added to CARMA for continuum observations at$26−
36$GHz (1cm) and$85−
115$GHz (3mm). The different sizes of the CARMA antennas make it a heterogeneous array with a total collecting area equiv$
$element CARMA array has 3 different primary beams), there are a number of advantages. Such an array samples shorter spa$

$_t emplate/3/carma_configs.ps[The three CARMA array configurations used] The three CARMA array configurations used$
66
mid-
dle
$B_{max} =$
148
right
$B_{min} =$
370
$_t emplate/3/carma_layout.ps[The layout of antenna pads for CARMA] The layout of antenna pads for CARMA and a visualo$

??
??
ν
50×
(230 GHz/ν)
30×
(230 GHz/ν)