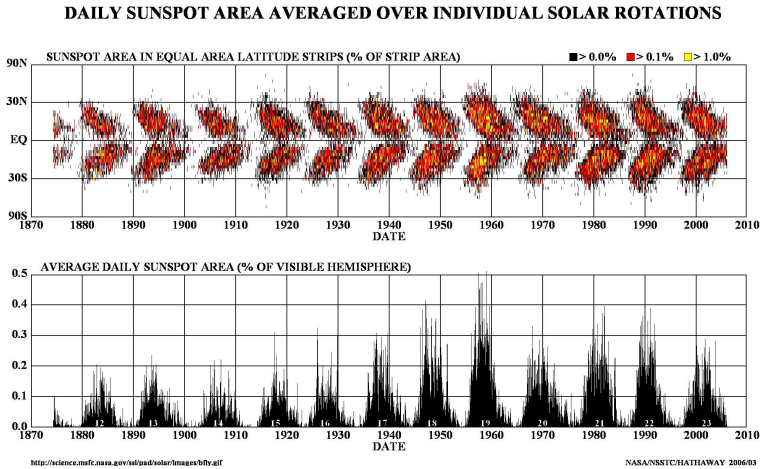
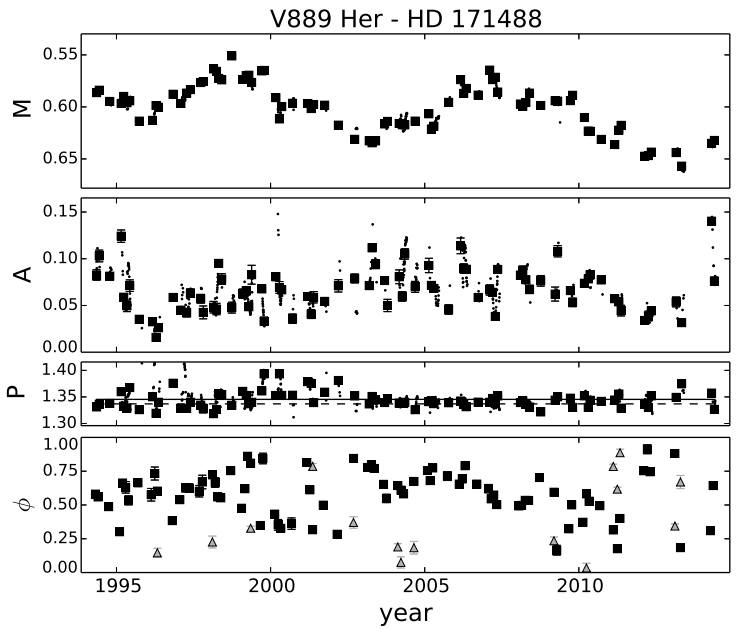
Observing stellar activity

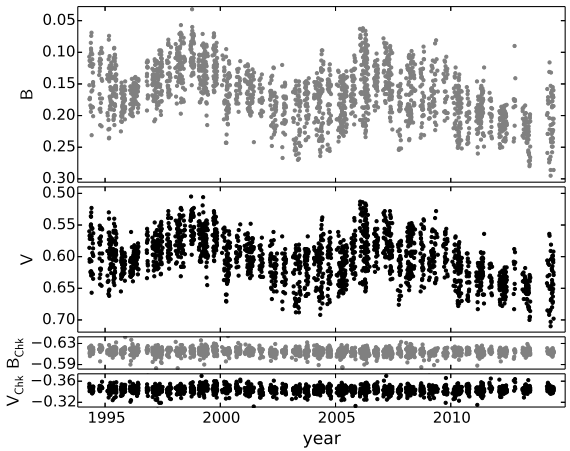
Jyri Lehtinen

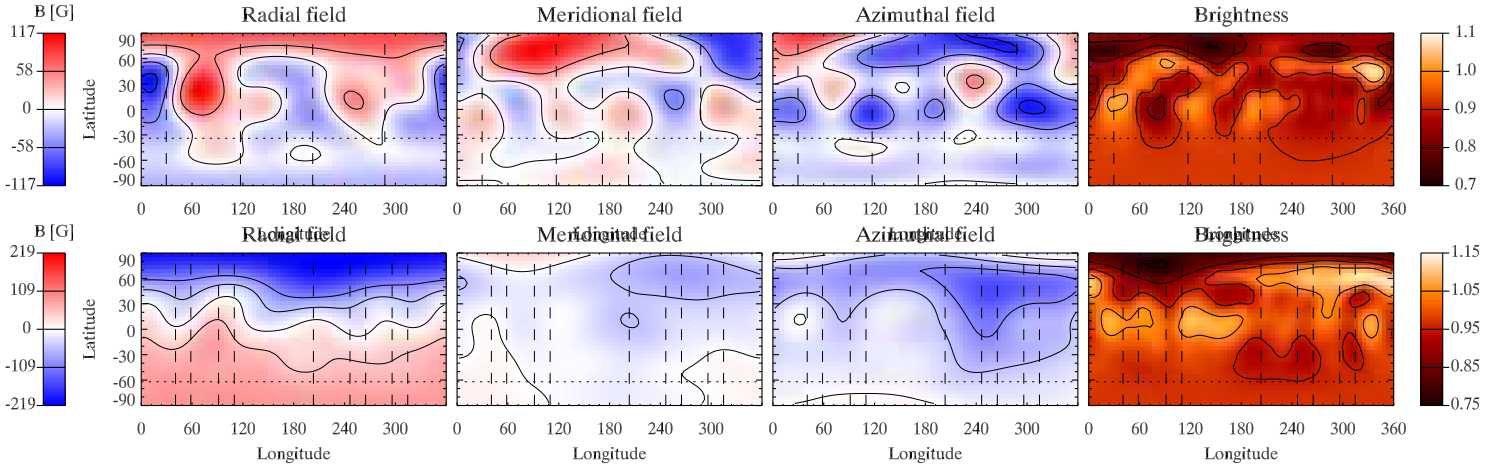
University of Helsinki
ReSoLVE Centre of Excellence, Aalto University
Max Planck Institute for Solar System Research

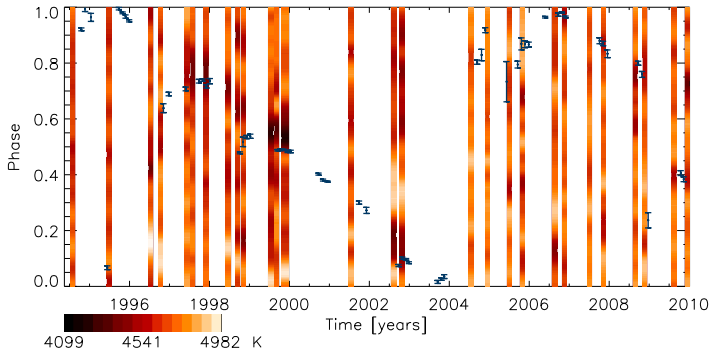
23 August 2016

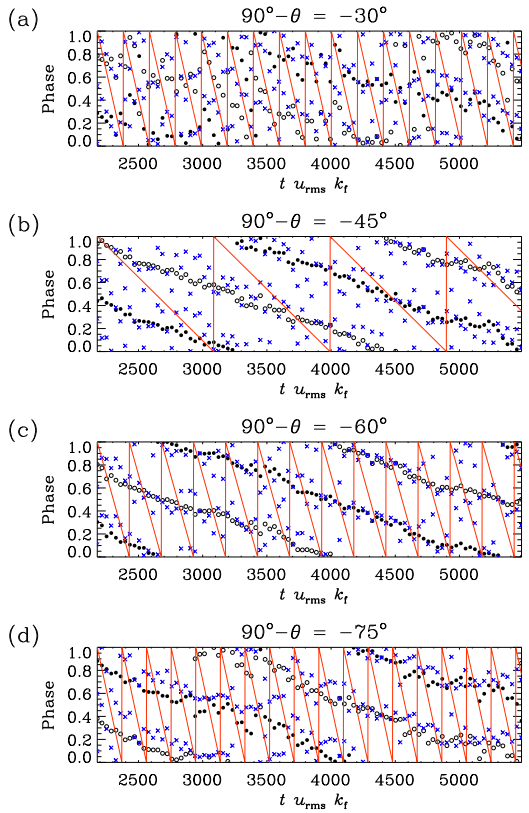

DAILY SUNSPOT AREA AVERAGED OVER INDIVIDUAL SOLAR ROTATIONS
SUNSPOT AREA IN EQUAL AREA LATITUDE STRIPS (% OF STRIP AREA)
> 0.0% > 0.1% > 1.0%
90N
30N
EQ
30S
90S
1870 1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010
DATE
AVERAGE DAILY SUNSPOT AREA (% OF VISIBLE HEMISPHERE)
0.5
0.4
0.3
0.2
0.1
0.0
12 13 14 15 16 17 18 19 20 21 22 23
1870 1880 1890 1900 1910 1920 1930 1940 1950 1960 1970 1980 1990 2000 2010
DATE
http://science.msfc.nasa.gov/ssl/pad/solar/images/bfly.gif
NASA/NSSTC/HATHAWAY 2006/03

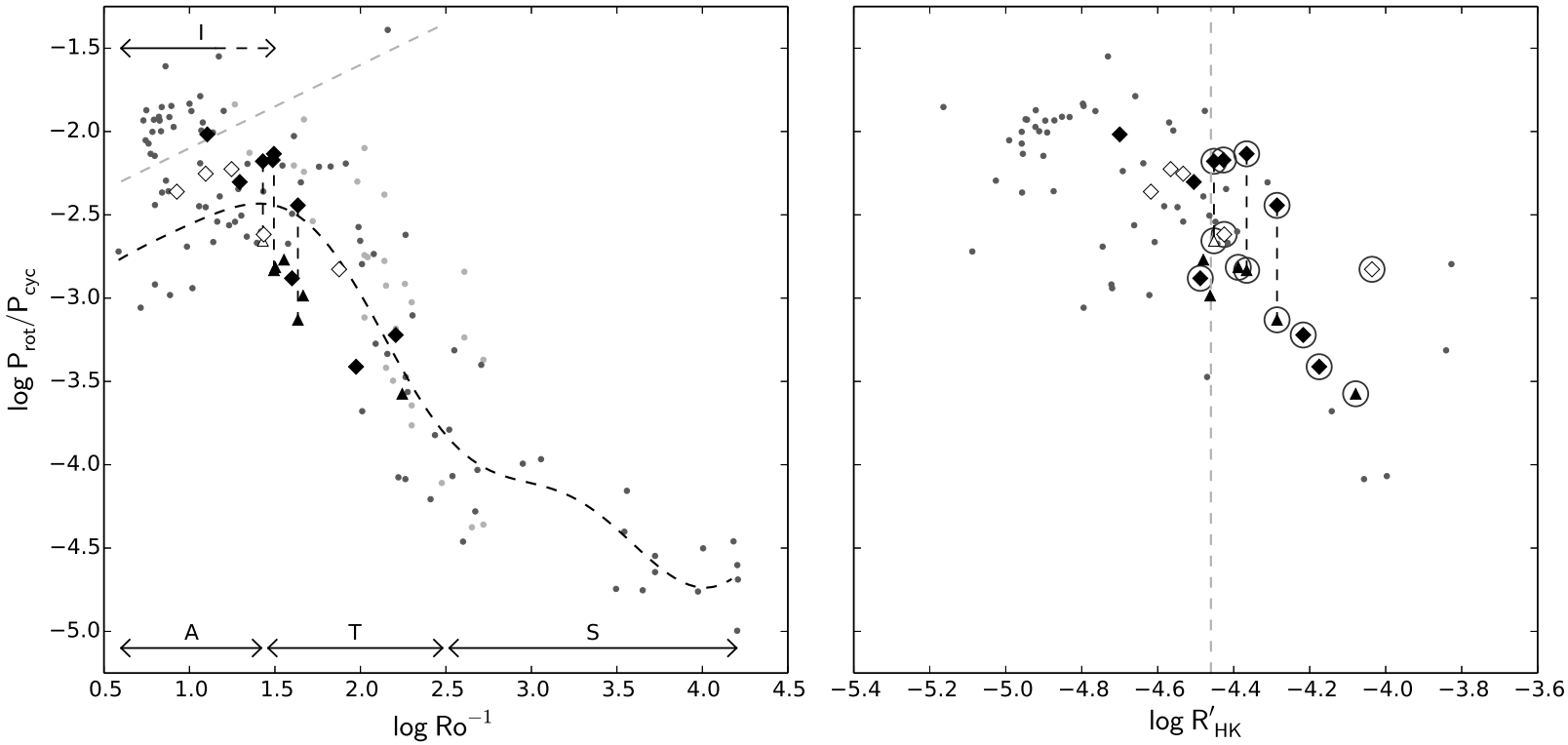

V889 Her - HD 171488
M
0.55
0.60
0.65
A
0.15
0.10
0.05
0.00
P
1.40
1.35
1.30
ϕ
1.00
0.75
0.50
0.25
0.00
1995 2000 2005 2010
year


B
0.05
0.10
0.15
0.20
0.25
0.30
V
0.50
0.55
0.60
0.65
0.70
B_Chk
−0.63
−0.59
V_Chk
−0.36
−0.32
1995 2000 2005 2010
year


Radial field
Meridional field
Azimuthal field
Brightness
B [G]
Latitude
Longitude


Phase
Time [years]
4099 4541 4982 K


(a) 90°−θ = −30°
(b) 90°−θ = −45°
(c) 90°−θ = −60°
(d) 90°−θ = −75°
Phase
t u_rms k_f


I
A
T
S
log P_{rot}/P_{cyc}
log Ro^{-1}
log R'_{HK}