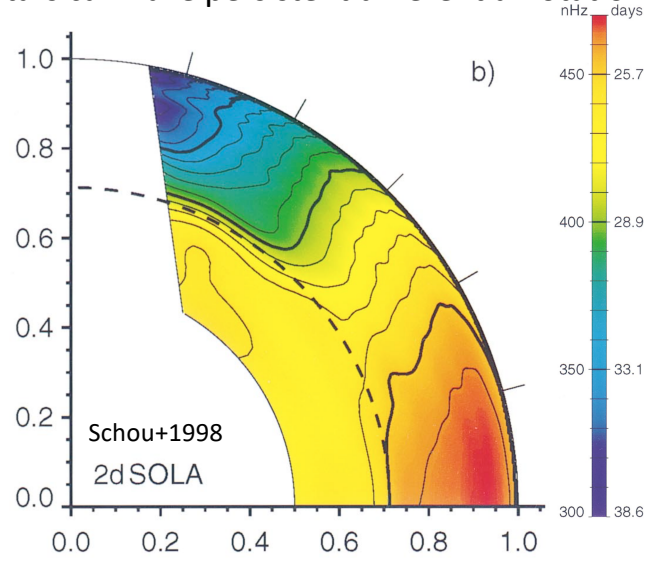


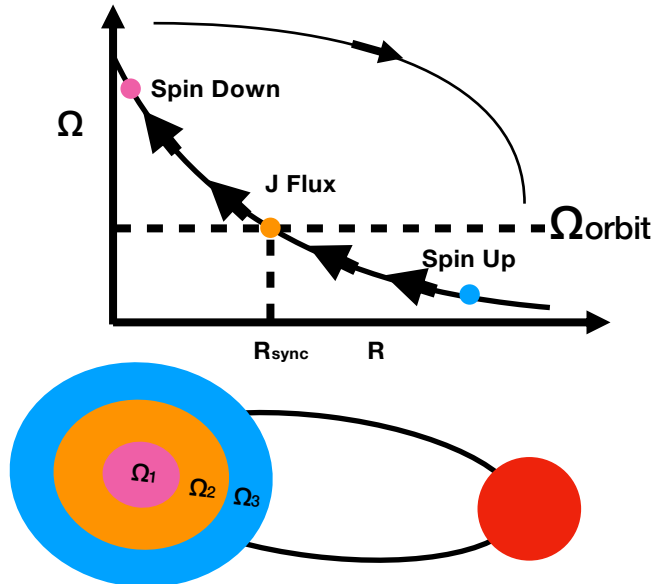
TIDES, DIFFERENTIAL ROTATION, AND ECLIPSING BINARIES

ADAM S. JERMYN

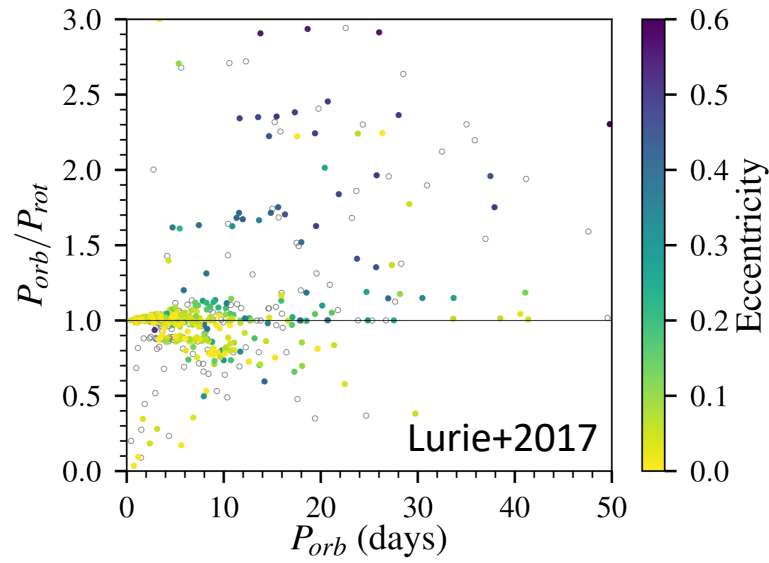
Stars can have persistent differential rotation.



Differential rotation means that a binary can be *synchronized* without having $P_{rot}=P_{orb}$!



This may have been seen in eclipsing binaries:



We use Kepler eclipsing binaries to infer tight constraints on radial differential rotation:

$P_{orb,min}$	$P_{orb,max}$	β	$\beta_{1-\sigma}$	$\beta_{2-\sigma}$
Radial Shear				
0	50	0.152	0.251 -0.482	0.337 -0.632
0	2	0.000	0.010 -0.010	0.019 -0.022
2	6	0.031	0.091 -0.252	0.139 -0.346
6	10	0.066	0.373 -0.330	0.677 -1.186
10	50	0.264	1.329 -1.911	2.267 -2.778

Very sub-solar radial shear!

