Subject: Re: Circular statistics in IDL
Posted by Dick Jackson on Fri, 30 Dec 2016 01:16:00 GMT
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On Wednesday, 21 December 2016 09:25:04 UTC-8, Craig Markwardt wrote:
> On Tuesday, December 20, 2016 at 11:05:03 AM UTC-5, Gadi Goelman wrote:

>> What I need is to calculate significance of complex numbers or phases. Do you know if correct calculations of mean, variance etc is sufficient? I guess that you cant assume normal distributions and different distributions are needed such circular Gaussian.
>
> I'm a big fan of the Rayleigh (Z) statistic. It's pretty easy to calculate. For an array of unit complex number U, it's
>
> Z = total(abs(U)^2)
>
> In the case of the null hypothesis (only noise), the Z statistic is distributed as a chi-square with 2 degrees of freedom. You you can use IDL's chi-square statistic to test statistical significance, or my equivalent MPCHITEST() function.
>
> Craig

In general, I trust anything Craig says :-), and other sources point in the same direction:
https://en.wikipedia.org/wiki/Directional_statistics#Goodnes s_of_fit_and_significance_testing

Some MATLAB functions written for this seem to follow this:
https://github.com/circstat/circstat-matlab/blob/master/circ _r.m
https://github.com/circstat/circstat-matlab/blob/master/circ _rtest.m

I hope this is helpful!

Cheers,
-Dick

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