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Nonlinear Processes in Geophysics
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Interactive comment on "Dual plane PIV investigation of acoustically excited jets in a swirl nozzle" *by* G. S. Regunath et al.

Anonymous Referee #2

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This is an interesting and well written paper on novel precision measurements of helicity in a model turbulent system (acoustically excited swirling jets). The primary conclusions are based on comparisons between the cases without and with acoustic excitation. It is shown that the turbulent dynamics, specifically the distribution of helicity angles, is markedly modified by the acoustic excitations. I certainly find it well suited, in content and execution, for the journal and the special issue for which it is under consideration.

I think there are a lot of intriguing aspects in this preliminary study. I would like to ask the authors a few questions:

1. It seems that, although the primary helicity angle in the acoustically excited state is around 90 deg., there is a definite second peak in panels (b)-(d) of Fig. 7. Could

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the authors comment on the significance/implications of this second peak? The authors concluded that the helical vortices are not dominated by coherent structures with maximal helicity, which I would agree with, however, there certainly are some coherent structures with (nearly) maximal helicity!

2. Do the authors have some comments on whether the distribution of helicity angles could be "controlled", in a sense, through the acoustic excitations. Clearly, the acoustic frequency f goes into the Strouhal number, and Fig. 7 shows the effect of St on the distribution of helical angles. Do the authors have any evidence, or thoughts/ideas, on whether the qualitatively similar distributions in panels (b)-(d) are robust for a larger range of St or whether further "bifurcations" might be found at higher/lower St? This would suggest, to me, some ability to control the helicity by priming the jet with the acoustic waves.

Interactive comment on Nonlin. Processes Geophys. Discuss., 2, 1407, 2015.