

Design and Manufacturing Characteristics That Effect Accuracy and Repeatability of Worm and Wormwheel Rotation Stages

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The need to rotate Samples or Monochromators in Neutron Instruments is often achieved by the use of Rotary Stages that contain a worm and wormwheel mechanism. The accuracy and/or repeatability with which the Sample or Monochromators can be rotated are often critical to achieve the performance required by the Instrument.

This presentation explores some of the Design and Manufacturing characteristics that impact on accuracy and repeatability performance. Although some quantitative analysis is considered, qualitative appraisal of some characteristics that are difficult to calculate will also be examined.

Factors such as the use, resolution and location of the resolver or encoder, the impact of torsional loading on the stage, choice of the worm and wormwheel gear ratio, consideration of gear mesh backlash control and gear stiffness, bearing and bearing support structure stiffness, Encoder/Resolver coupling torsional stiffness, gear mesh quality and the effect of eccentricity between the Wormwheel bearing centre and the centre of its gear form will all be discussed.

Formal Invitation Letter Required

Yes

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