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**Thermal shrink fit heat sink for experiments at <4K**

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Novel designs of a 10" diameter indium sealed flange and a thermal shrink fit heat sink were developed for experiment inserts which mount in a superfluid helium dewar for the Low Temperature Microgravity Physics Program. The new feature of the indium sealed flange is a series of radial cuts to create flaps at each bolt. Each flap deflects 5 times more than the bolt under nominal preload to compensate for indium creep over time. The thermal shrink heat sink provides a high conductance,  $>1\text{W/K}$ , link to the superfluid helium without additional penetrations into the superfluid tank or significant mass impact. It consists of a copper ring, divided into three arcs, concentric with a titanium ring on the inside and an aluminum instrument vacuum can on the outside. An assembly of an aluminum can containing the heat sink and sealed using the new flange design was used to test the reliability of both designs under thermal cycling. The testing apparatus consists of a low RPM DC motor driving a spool and cable to repeatedly dunk the assembly in liquid nitrogen. Both indium seal and heat sink performed consistently over several thermal cycles and a period of several weeks.

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