

# MPMS Option Specifications

## Option M101A

### Transverse Moment Detection System

The standard MPMS configuration employs a single SQUID sensor to measure magnetic moments aligned parallel with the applied field. To examine the anisotropic effects of moments with vector components perpendicular to the applied field, a Transverse Moment Detection System option may be added. It incorporates a second SQUID detection system which can resolve transverse moments as small as  $1E-6$  EMU. The transverse superconducting coil array is wound in a second-derivative configuration orthogonal to the longitudinal detection coils—with both coil sets sharing a common center position. Thus, the user can easily specify the use of longitudinal, transverse or both SQUID systems for programmed measurement sequences.

#### Dynamic Range:

$1E-6$  to  $>1.5$  EMU; option to 300 EMU

#### Detection Loop:

$d^2B_x/dz^2$  Array  
(second derivative configuration)

#### Calibration Accuracy:

1% absolute

*"You can even investigate magnetic anisotropy with our Transverse Moment Detection and Rotator options."*



## Option M101B

### Vertical Sample Rotator

This Vertical Sample Rotator permits users of the Transverse Superconducting Coil Set to rotate samples  $\pm 360$  degrees about the longitudinal axis of the solenoid under computer control, facilitating such activities as 3-axis measurements of a sample.

Sample orientation can be specified within 0.1 degrees under either computer or manual control.

#### Range of Motion:

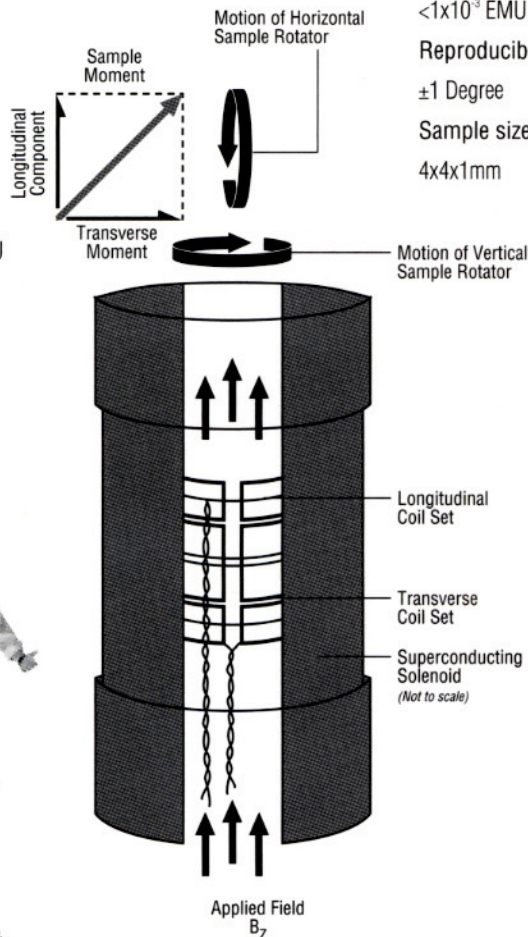
$\pm 360$  Degrees

#### Slew Rate:

45 Degrees per second

#### Angular Positioning Resolution:

$\pm 0.5$  Degrees



Transverse and longitudinal magnetization as a function of  $\Theta$  for a  $Bi_2Sr_2CaCu_2O_y$  crystal cooled in a 1.0 Tesla field. Longitudinal and transverse moments are measured simultaneously with separate pick-up coils.

## Option M101C

### Horizontal Sample Rotator

The Horizontal Sample Rotator is used for rotating a sample with respect to the magnetic field. This option, which requires the Vertical Sample Rotator (M101B), will rotate a thin film (or other small sample) for measuring the magnetic moment versus angular position.

#### Rotation:

0 to 360 Degrees  
in 0.1 Degree Increments.

#### Background:

Linear & Diamagnetic

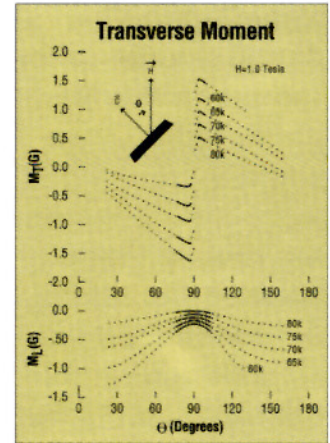
$<1 \times 10^{-3}$  EMU @ 5T

#### Reproducibility:

$\pm 1$  Degree

#### Sample size:

4x4x1mm



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## Option M102

### Sample Space Oven

MPMS magnetic moment measurements can be made at temperatures from ambient to 800 Kelvin through use of the optional Sample Space Oven. Operation is completely automated through control software which is fully integrated into the MPMS operating system. The Oven is an insulated heater assembly which is introduced directly into the normal MPMS sample space. Its sample space is 3.5 mm in diameter. Because the Oven employs a vacuum sleeve to isolate high temperatures from the standard MPMS temperature control system, the normal sample space remains below room temperature—minimizing helium requirements when operating the Oven for extended experiments. The Oven can be quickly and easily installed or removed as needed.

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