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地磁信息的旋转弹姿态算法研究(PDF)

Title:	The Study on Attitude Algorithm of Rolling Projectile Using Geomagnetic Information

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摘要： 针对小口径高转速旋转弹姿态测量问题，提出了一种利用纯地磁组合信息获取旋转弹姿态的算法。通过参考坐标系的关系构建姿态变换矩阵，建立姿态角的数学模型，并设计相应的纯地磁姿态算法，利用仿真软件得到三轴地磁信号来进行姿态解算。结果表明，本姿态算法可以实时解算较高长时精度的姿态角，可以为常规旋转弹药制导化提供姿态信息。

Abstract: In order to measure attitude angle for projectile with small caliber and high rotational speed, the attitude algorithm was presented based on pure geomagnetic information. Through building attitude transformation matrix with reference to the relation of coordinated system, the mathematic model of attitude angle was established, and corresponding pure attitude algorithm was designed. The magnetic field model was simulated for tri axial geomagnetic information, and was computed by this attitude algorithm in sequence. The result shows that this attitude algorithm has higher long term precision. It can be used for attitude control system in some type of rolling projectile.

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