Redundant safety method based on geomagnetic signal

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Abstract: In view of the problem that the second environmental forces are weak and not easy to be measured, a three-axis magnetic sensor is used to detect the geomagnetic field intensity on the muzzle based on the directivity of the geomagnetic field. The information is obtained when the shot leaves the muzzle, which can be used as the driving source of the fuze redundant safety machine. The method of redundant safety based on geomagnetic signal is analyzed, and a mathematic model of the three-axis magnetic sensor measuring the geomagnetic field is built. Some simulations are carried out in different regions and different launching conditions. The results show that the geomagnetic signal on the muzzle can be the second environment prompting of the fuze; the measuring blind area can be avoided by replacing a single-axis magnetic sensor with a three-axis magnetic sensor. The method can ensure the reliability of the redundant safety based on geomagnetic signal.
Author Keywords: Fuzes; Geomagnetic field intensity; Magnetic sensors; Redundant safety

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