



## **The preliminary design and analysis of torsional moment flexure spring gradiometer**

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The gravity gradient is the second derivative of the gravity potential, it is very sensitive to the disturbance of the density of the Earth, which can reflect the weak change of the geological structure, so it can tell us more details of the gravitational field comparing with the gravimetric measurement. The gravity gradiometer behaves important application in the fields of the Earth science, such as inertial navigation, geophysics, earthquake, geology science, Earth's resource survey and so on.

In our group, a two-dimension flexure spring gravity gradiometer is preliminary designed with low-noise capacitive position sensor and electrostatic feedback technique. The system is a Centro symmetric structure composed of the spring, Z-beam and test mass based on torque measurement model, when subjected to the gravity gradient, the beam is rotated in both directions, we can get full gravity gradient by the rotational angle measurement and combination. Furthermore, this system can be integrated to a product in order to make exploration conveniently and rapidly.