

**Title: Towards developing an extremely sensitive and accurate magnetometer.**

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**Abstract:**

Sensitive and accurate measurement of weak magnetic fields is of paramount importance in a variety of fields like environment, defense, navigation, interplanetary research, etc. In recent times, for example, a variety of biomedical methodologies of measuring extremely small magnetic fields of humans have been developed.<sup>1</sup> In all such applications, the primary requirement is a sensitive and accurate measurement of magnetic field.

In this regard, it is worth noting that magnetic resonance based magnetometers (MRM), which are the most accurate magnetometers available today, are not the preferred method for such applications.. This is primarily due to their poor sensitivity and large size. Thus, one has to compromise accuracy at the expense of sensitivity and or size.

In this talk, I will discuss a novel strategy, which holds great promise to overcome this limitation. I will first introduce the key problems of achieving a high sensitivity in MRM and then discuss a strategy that can result in an extremely sensitive and accurate magnetometer.

**References**

1. Murzin, D.; Mapps, D. J.; Levada, K.; Belyaev, V.; Omelyanchik, A.; Panina, L.; Rodionova, V. Ultrasensitive Magnetic Field Sensors for Biomedical Applications. *Sensors* **2020**, *20* (6), 1569.