

**Search For Exotic Spin-Dependent Force with Atomic Comagnetometer**

**Search For New Light Boson Mediated Force**

**Search For Z'/Axion Mediated Force**

**Search For the 5th Force**

$$\mathcal{L}_{Z'} = Z'_{\mu} \sum_{\psi} \bar{\psi} \gamma^{\mu} (g_{\psi}^V + \gamma_5 g_{\psi}^A) \psi$$

**B field  $\delta B \approx 1 \text{fT}/\sqrt{\text{Hz}}$  !**

**Energy Resolution  $\delta E \approx 10^{-22} \text{eV}$**

**Tighter Than Astrophysical Limits**

**Table-top Experiment to Search For New Physics**

$$V = \frac{(g_A^2 - 3g_V^2)\hbar^2}{16\pi m_f c} [(\hat{\sigma} \cdot (\mathbf{v} \times \hat{\mathbf{r}})] \left( \frac{1}{\lambda r} + \frac{1}{r^2} \right) e^{-m_z r}$$

