Title : Construction of Atomic Magnetometer base on Rb-87

Author(s) : 1. Nadhnatee Tiamchaiyaphumi **Student ID :** 640510359

2. **Student ID :**

3. **Student ID :**

Major : Physics

Advisor(s) : 1. Assistant Professor Dr. Sumet Sakulsermsuk

2.

3.

Type of presentation* *(choose 1)* **:**

- ☐ **Oral Presentation** (เฉพาะ ตัวแทนนศ.ที่สาขาเลือกให้นำเสนอแบบบรรยาย)
- ☑ **Poster** (กรณี นำเสนอผลงานปัญหาพิเศษ/การค้นคว้าอิสระ)
- ☐ **Cooperative Education** (กรณี นำเสนอผลงานสหกิจศึกษา)

ABSTRACT

Ultrahigh precision magnetometers are used in many fields, for example in medical, military and space exploration. This study aimed to demonstrate one type of them, atomic magnetometer base on Rb 87. The reference cell, contain isotope 87 of rubidium is placed at the center of two layer three – axis compensation Helmholtz coil which used to cancel earth and noise magnetic field. 780 nm circular polarized laser shine into the cell as pump and probe beam. Pump beam is used for preparing atoms by optical pumping process which is transferring energy and angular momentum from laser into atoms to change its quantum state to L = 0, F=2 and mf = 2 state. probe beam is used for observing behavior inside the cell. When magnetometers sense magnetic fields the polarization of atom changes and affect to probe beam. Signals from probe beam are detected by photodiode. Without the test sample, photodiode read full power of probe beam but when there are test samples the read power drops due to changing polarization of the cell.

**Type of presentation must be matched with an option you choosing on student upload system.*

***The abstract can be more than one page and must be approved by project advisor before upload.*