

**Sudan University of Science and Technology**  
**Faculty of Graduate Studies**

**Applications of Lie algebras to Conservation laws of  
Physics**

تطبيقات جبر لي لقوانين الفيزياء المحافطة

**By**

**Duaa Hejazi Idress Banaga**

**A thesis submitted in fulfillment of the  
Requirements for the degree of Doctor of  
Philosophy in Mathematics**

**Supervisor :**

**Prof. Mohammed Ali Bashir**

**Seb.2015**