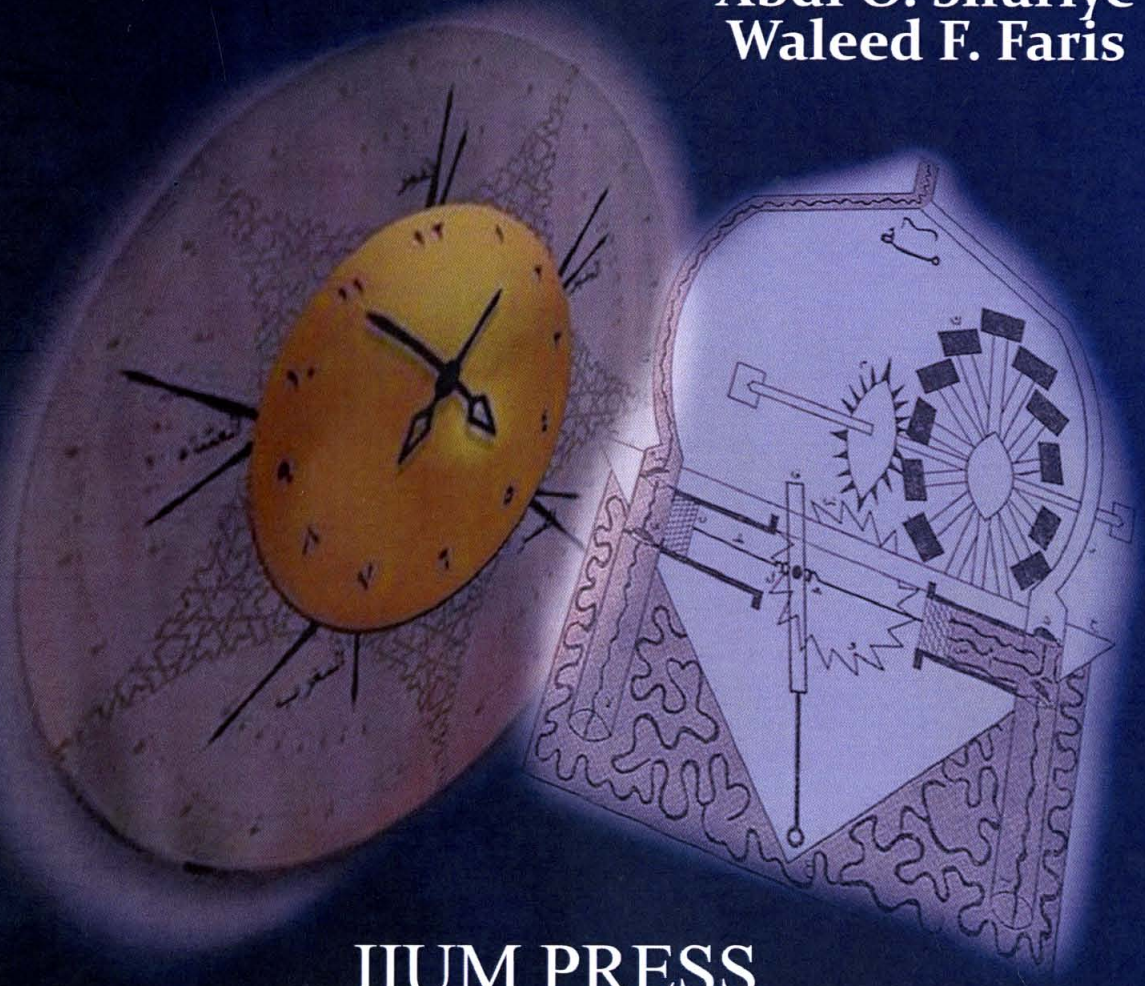
# Contributions of Early Muslim Scientists to Engineering Studies and Related Sciences

Abdi O. Shuriye
Waleed F. Faris



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# CHAPTER FIFTEEN

# CONTRIBUTIONS OF IBN AL-HAYTHAM ON OPTICS

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## 15.1 INTRODUCTION

The objective of this chapter is to explore optics in view of Ibn Haytham's work on optics.The methodology adopted is based on data collected from articles, journals and books. This chapter investigates the contribution of Ibn Al-Haytham in optics and related fields. Moreover, the main focus of this chapter is to discuss optics theory by Ibn Al-Haytham. The significance of this is that it provides knowledge on optics theory based on Ibn Haytham's work.

## 15.2 HISTORY OF IBN AL-HAYTHAM

Ibn Al-Haytham or also known as Alhazen was born in Basra about year 965 and travelled to Egypt and Spain. He worked in Cairo and died there in the year 1040. During his period of imprisonment, he wrote his influential "Kitab Al-Manazer" or known as the Book of Optics. Instead of that book, he also wrote several significant books and chapters about physics, mathematics, engineering, astronomy, medicine, psychology, anatomy, visual perception and ophthalmology. Essentially, Ibn Al-Haytham was a productive author in which he wrote more than 200 works on a broad range of subjects where about 96 of his scientific works are known and almost 50 of them have survived to date. (Tbakhi A; Amr SS, 2007)

## 15.3 DEFINITION OF OPTICS

According to Britannica Dictionary (2011):

> "Optic science concerned with the genesis and propagation of light, the changes that it undergoes and produces, and other phenomena closely associated with it. There are two major branches of optics, physical and geometrical. Physical optics deals primarily with the nature and properties of light itself. Geometrical optics has to do with the principles that govern the image-forming properties of lenses, mirrors, and other devices that make use of light. It also includes optical data processing, which involves the manipulation of the information content