

# Download File PDF Abstract Science Paper Example

#Jenny



*Finally I get this ebook, thanks for all these I can get now!*

#Rio



*Cool! I'am really happy*

#Markus Jensen



*I did not think that this would work, my best friend showed me this website, and it does! I get my most wanted eBook*

#Hun Tsu



*wtf this great ebook for free?!*

#Che Salsa



*My friends are so mad that they do not know how I have all the high quality ebook which they do not!*

#Diego Butler



*so many fake sites. this is the first one which worked! Many thanks*

[Download PDF version of :](#)  
**Abstract Science Paper Example**

CHAPTER 12

**The Science of a Drive**

**Douglas N. Arnold**

**Abstract**

Golf provides numerous examples of common physical phenomena which can be elucidated through mathematics. This notes provides a simple introduction to mathematical modeling in golf, by briefly describing a few of the many ways mathematics can be used to understand or improve the golf drive. First we describe the double-pendulum model of a golf swing, which is a simple but useful model of the mechanical system consisting of the golfer and the golf club, used to accelerate the club head. Second we consider the basic mechanics of the energy and momentum transfer which takes place when the club head impacts the golf ball. Finally we describe the three basic forces—gravity, drag, and lift—which determine the ball's trajectory after it is struck by the club.

"Math and science are everywhere." With those words, championship golfer Phil Mickelson began a public service television advertisement produced by ExxonMobil and premiered during the 2007 broadcast of the Masters Golf Tournament. I had the privilege to serve as the mathematical consultant for the ad and for the accompanying website, *The Science of a Drive*, from which the title of this article is taken. Figure 12.1 displays a still frame taken from the advertisement and another taken from the website.

The golf drive does indeed provide numerous examples of the ways mathematics elucidates common physical phenomena. Many aspects of it can be illuminated or improved through mathematical modeling and analysis of the mechanical processes entering into the game. Here I present a few simple examples collected during my consulting work. Specifically I briefly discuss three applications of mathematical modeling to fundamental mechanical processes in the golf drive: the double-pendulum model of a golf swing, transfer of energy and momentum in the club-head/ball impact, and drag and lift in the flight of the golf ball.

149

University Publishing Online, hosted by Cambridge University Press © 2011