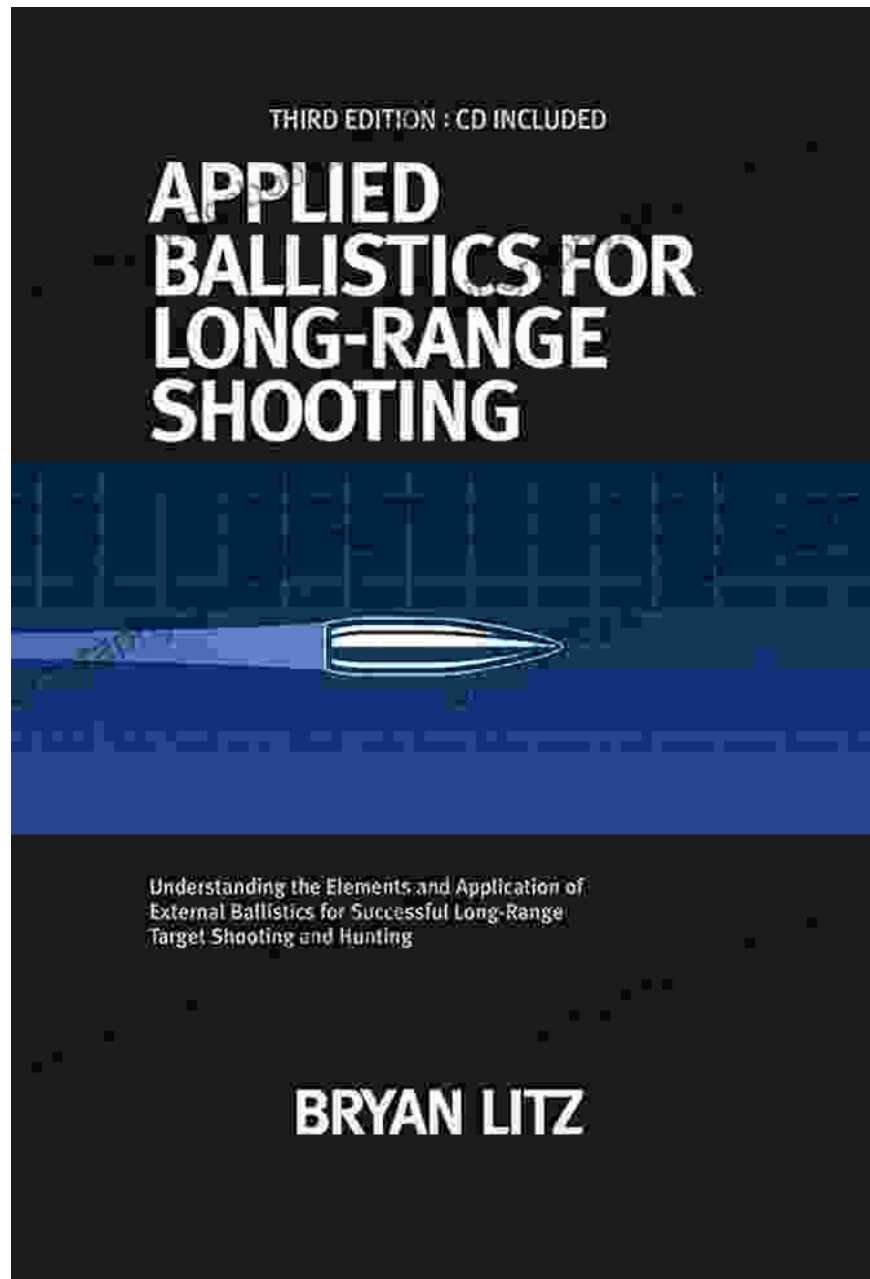
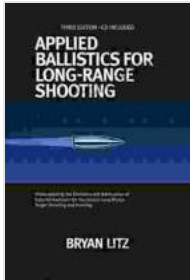


# Understanding the Elements and Application of External Ballistics for Long-Range Shooting



Applied Ballistics For Long-Range Shooting 3rd Edition: Understanding the Elements and Application of



## External Ballistics for Successful Long-Range Target Shooting and Hunting

by Bryan Litz

★★★★☆ 4.8 out of 5

Language	: English
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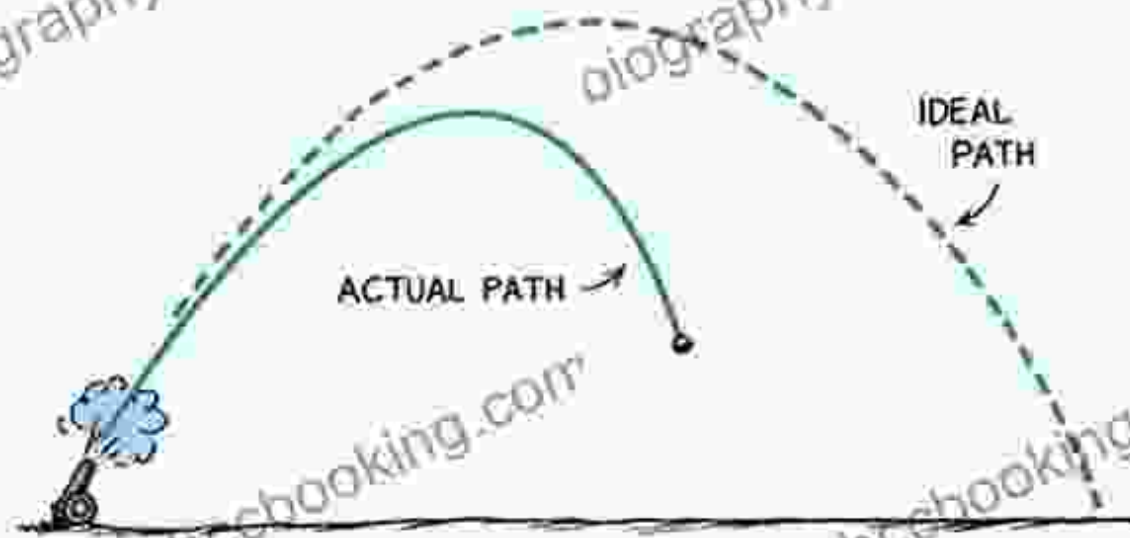
Long-range shooting is a demanding discipline that requires a deep understanding of external ballistics, the science of projectile motion beyond the barrel of the firearm. This comprehensive guide delves into the intricacies of external ballistics, providing riflemen with the knowledge and tools to achieve exceptional accuracy at extended distances.

### Elements of External Ballistics

#### 1. Wind Effects

## 5.6 Projectiles Launched at an Angle

In the presence of air resistance, the path of a high-speed projectile falls below the idealized parabola and follows the solid curve.



Wind is a critical factor in long-range shooting, as it deflects the projectile from its intended path. Understanding wind direction, speed, and density is crucial for making accurate adjustments to shot placement.

## 2. Coriolis Effect

# Coriolis force

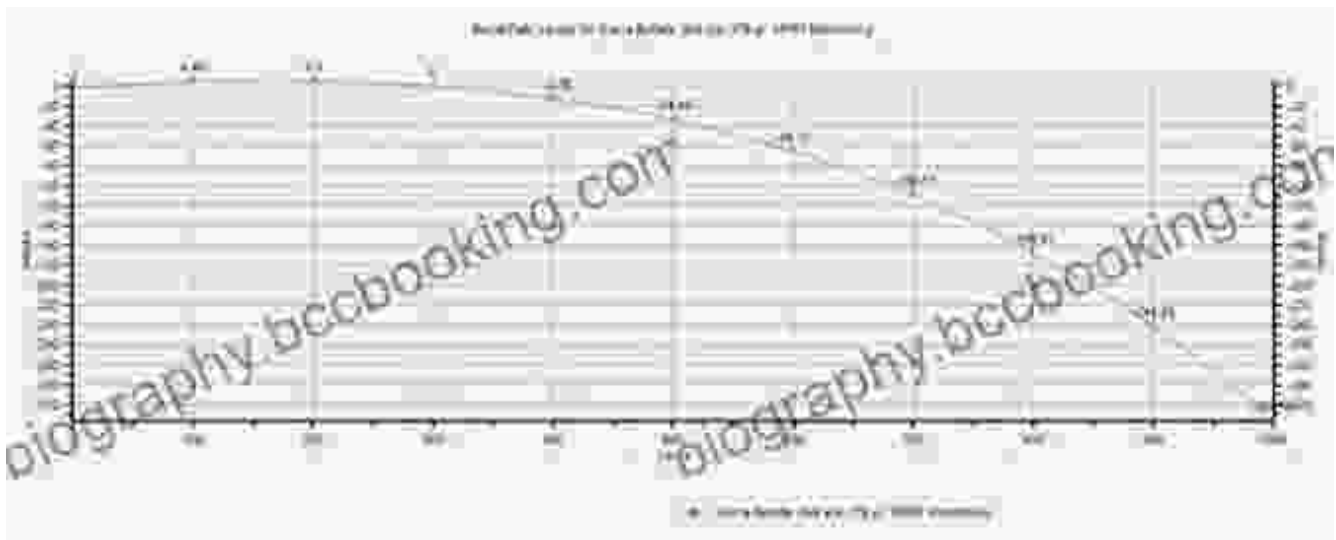


-----> Starting direction  
—————> Changed direction



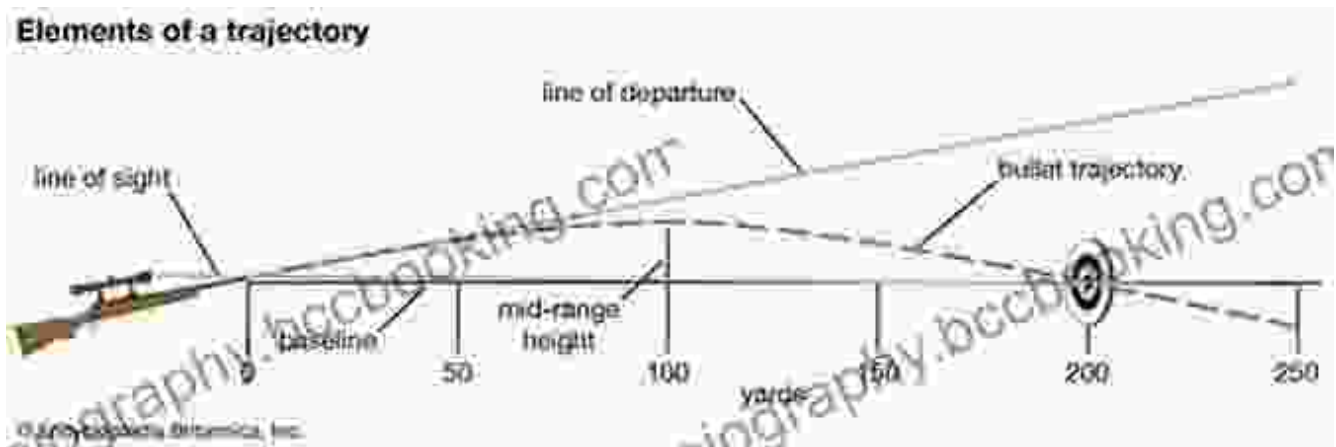
The Coriolis effect is a deflection of the projectile caused by the Earth's rotation. It affects shots over long distances, particularly when shooting east or west.

### 3. Trajectory Prediction



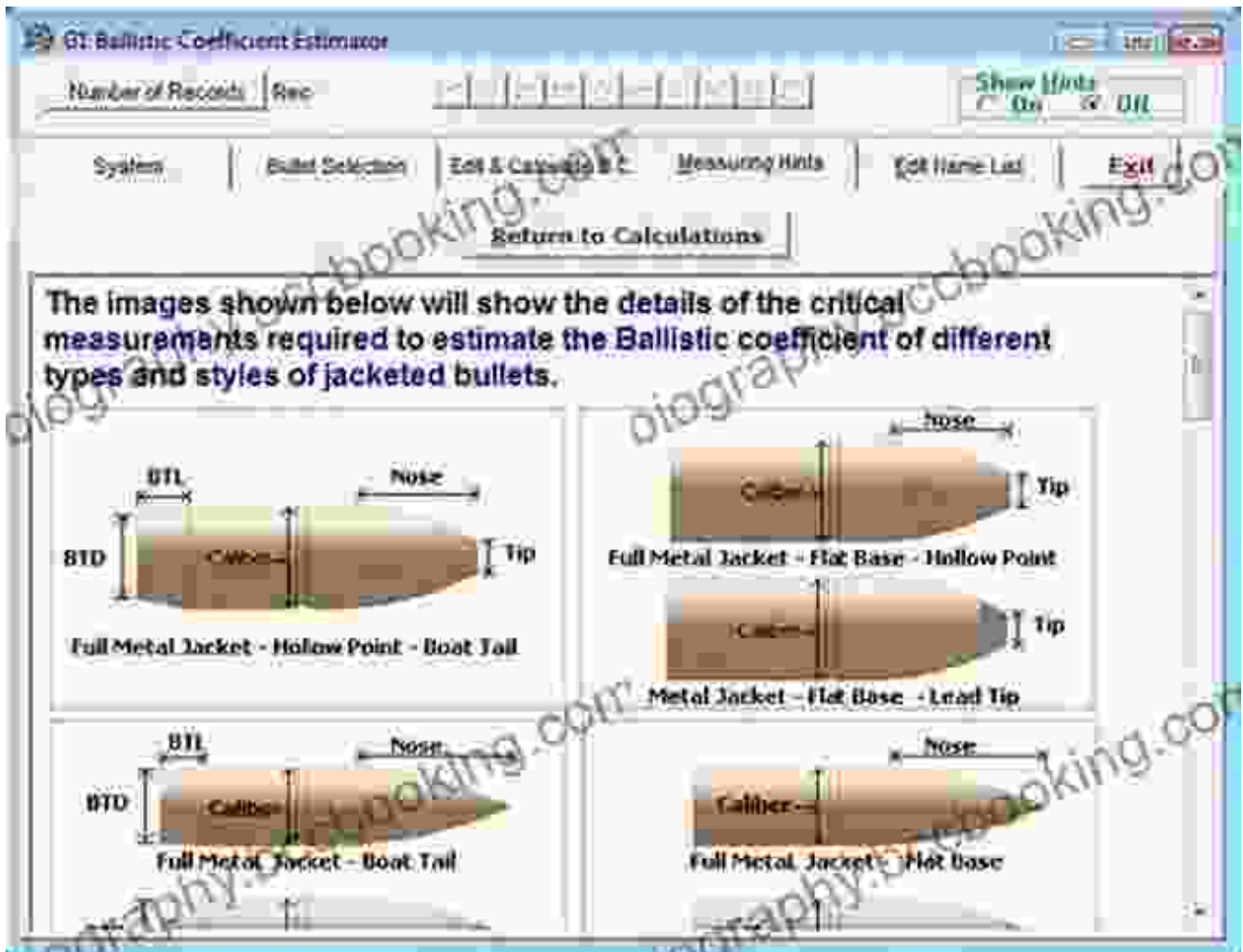
Trajectory prediction involves calculating the path of the projectile from the barrel to the target. Accurate trajectory prediction considers factors such as bullet speed, gravity, wind, and air density.

#### 4. Bullet Drop



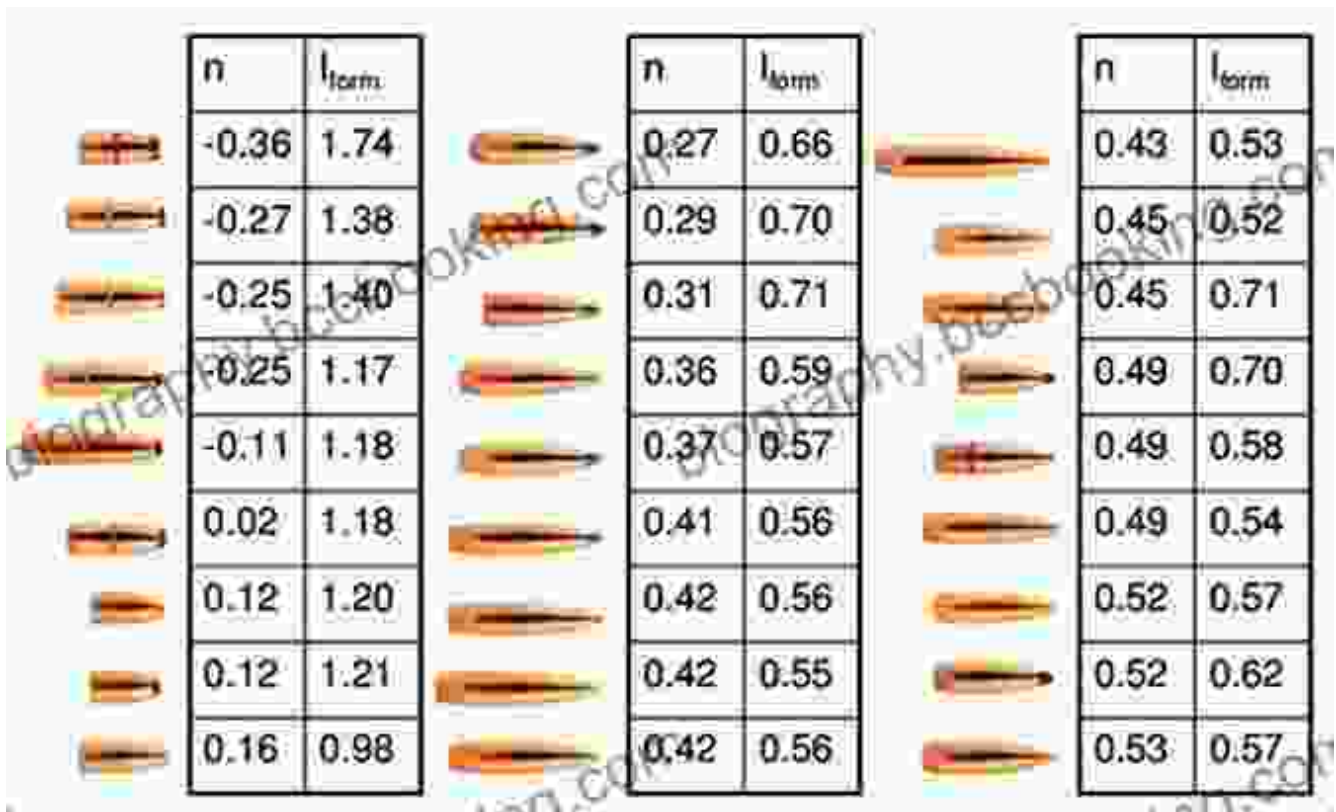
Bullet drop is the downward deflection of the projectile due to gravity. It increases with distance and must be accounted for in shot calculations.

#### 5. Ballistic Coefficient



Ballistic coefficient (BC) measures a bullet's resistance to air resistance. A higher BC indicates a lower drag and a flatter trajectory.

## 6. Drag Coefficient



Drag coefficient is a measure of the force of air resistance acting on the bullet. It affects the bullet's velocity and trajectory.

## 7. Environmental Factors



Environmental factors such as temperature, humidity, and altitude can impact projectile flight. They must be considered when making ballistic calculations.

## **Application of External Ballistics**

### **1. Range Estimation**

External ballistics principles allow riflemen to estimate the target range based on bullet drop and other factors.

### **2. Shot Analysis**

After a shot, analyzing the point of impact and comparing it to the intended point of aim helps riflemen identify external ballistics factors that influenced the shot.

### **3. Wind Calling**





Using external ballistics knowledge, riflemen can make wind calls to compensate for the effects of wind on the projectile's flight.

#### **4. Bullet Selection**

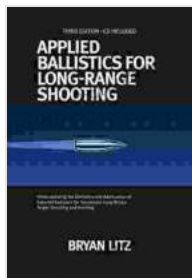
Choosing the right bullet for the intended range and conditions is crucial. External ballistics principles guide bullet selection based on factors like BC and drag coefficient.

#### **5. Cartridge Selection**

The cartridge also plays a role in external ballistics. Different cartridges offer different velocities and ballistic performance, which must be considered when making shot calculations.

Understanding the elements and application of external ballistics is paramount for long-range shooting accuracy. This comprehensive guide

has provided riflemen with the necessary knowledge and tools to master this intricate science. By applying these principles, shooters can make informed decisions, predict projectile flight, and achieve exceptional precision at extended distances.



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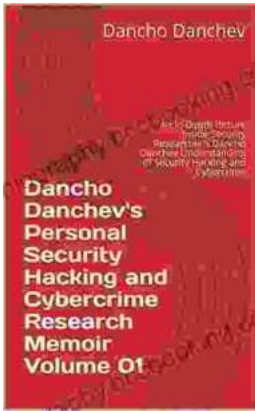
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