

Abstract Submitted  
for the DFD20 Meeting of  
The American Physical Society

**Assessment of wind's impact on a golf ball's trajectory and gameplay** SANDEEP SAHA, SHANATANU MALIK, Indian Institute of Technology Kharagpur, DEPT. OF AEROSPACE ENGINEERING TEAM — Golf is a high-speed ball sport with speeds exceeding 80m/s and thus aerodynamics plays a crucial role. The aerodynamic force depends on the relative airspeed of the ball and a gentle wind can deflect the ball's trajectory sufficiently to thwart the player's strategic gameplay. A moderate headwind of 5m/s can shorten the trajectory of a typical approach shot by up to 20%. This could be catastrophic, considering that the deviation due to inconsistency in launch conditions is only 4%. We assess wind's impact on golf using the equations of motions and case studies on 3 golf courses. First, we present the effects of wind on the trajectory due to variation in wind direction, golf club selection and the ball's aerodynamics characteristics. Thereafter, we describe adjustments and their effectiveness to counter the effects of wind. Finally, we explore how wind impacts gameplay strategies by simulating the series of golf shots in the Pebble beach, Muirfield and TPC Sawgrass golf courses having heroic, strategic and penal design styles respectively. In the presence of wind, penal courses tend to become prohibitive for all players, a heroic course might favour the experts whereas a strategic course forces the player to pick a certain route over the other.

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Date submitted: 09 Aug 2020

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