

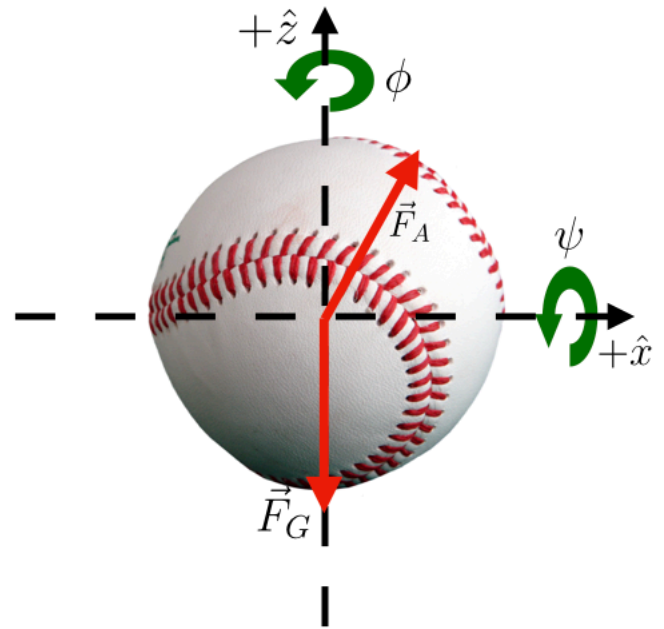
Physics Department Seminar

3pm February 21, 2020, Physical Sciences room 301

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Are Knuckleballs Chaotic?



The knuckleball is perhaps the most enigmatic pitch in baseball. Relying on the presence of raised seams on the surface of the ball to create asymmetric flow coupled with very little rotation, a knuckleball's trajectory has proven very challenging to predict compared to other baseball pitches such as fastballs or curveballs. Previous experimental tracking of large numbers of knuckleballs has shown that they

can move in essentially any direction. This has led to speculation that knuckleballs exhibit chaotic motion. Here we show that a relatively simple model of a knuckleball that includes quadratic drag and lift from asymmetric flow due to the presence of seams on the ball does indeed exhibit dynamical chaos as long as torques on the ball from the asymmetric flow are permitted.