technical proof

TP B.7
Effect of squirt on the amount of spin

supporting:
"The Illustrated Principles of Pool and Billiards"
http://billiards.colostate.edu
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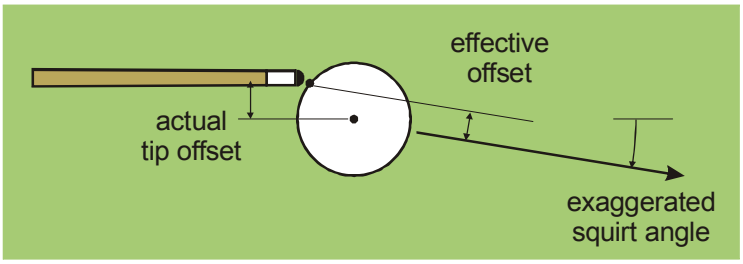
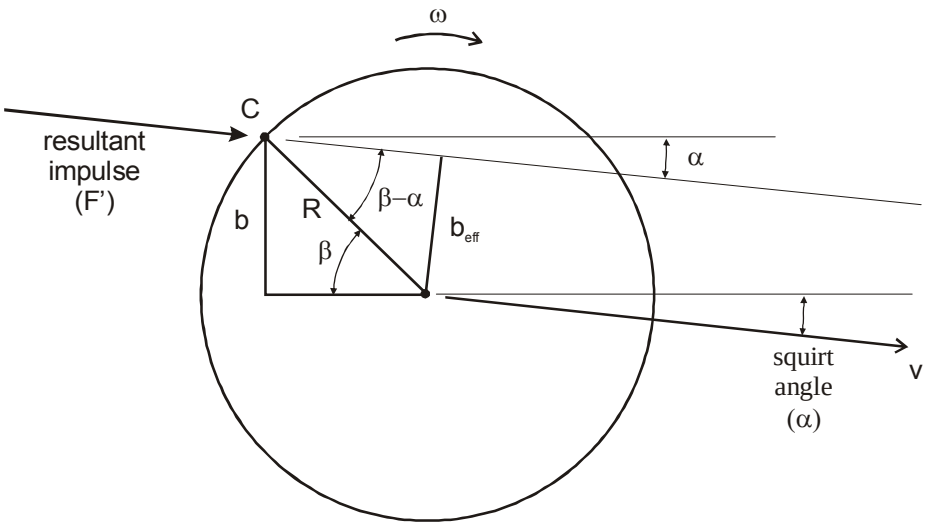
See **TP A.31** and my **December '07 article** for background information.





From the diagram above, the effective offset, for a cue with a squirt angle "α" and actual tip offset "b," is given by:

$$b_{eff} = R\cdot\sin(\beta - \alpha) = R\cdot\sin\left(\operatorname{asin}\left(\frac{b}{R}\right) - \alpha\right)$$

$$R := 1.125\cdot in \qquad b_{eff}(b,\alpha) := R\cdot\sin\left(\operatorname{asin}\left(\frac{b}{R}\right) - \alpha\right)$$

From **TP A.12**, the spin rate factor (SRF), which quantifies the amount of spin in relation to the roll rate of the ball, is:

$$SRF = \frac{5}{2} \cdot \frac{b_{eff}}{R}$$

Therefore, the "amount of spin" is directly proportional to the effective offset.

From my **September '07 article**, typical values for squirt angles for regular and low squirt cues, at maximum tip offset (R/2), are:

$$b := \frac{R}{2} \qquad \alpha_{reg} := 2.5 \cdot deg \qquad \alpha_{ls} := 1.8 \cdot deg$$

Here's how the amount of spin compares, as a percentage:

$$\frac{b_{eff}(b, \alpha_{ls})}{b_{eff}(b, \alpha_{reg})} - 1 = 2.339\,\%$$

Therefore, for maximum tip offset, a low-squirt cue can generate only about 2% more spin than a typical regular squirt cue.