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

supporting:
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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 \( \alpha \) and actual tip offset \( b \), is given by:

\[
b_{\text{eff}} = R \cdot \sin(\beta - \alpha) = R \cdot \sin \left( \arcsin \left( \frac{b}{R} \right) - \alpha \right)
\]

\[
R = 1.125 \text{ in} \quad b_{\text{eff}}(b, \alpha) := R \cdot \sin \left( \arcsin \left( \frac{b}{R} \right) - \alpha \right)
\]
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:

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

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:

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

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

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

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