The Zig-zag Instability of Streamlined Bodies[1] THIBAULT GUIL-
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technique ESPCI — When a floating bluff body, like a sphere, impacts water with
a vertical velocity, its trajectory is straight and the depth of its dive increases with
its initial velocity. Even though we observe the same phenomenon at low impact
speed for axisymmetric streamlined bodies, the trajectory is found to deviate from
the vertical when the velocity overcomes a critical value. This instability results
from a competition between the destabilizing torque of the lift and the stabilizing
torque of the Archimede's force. Balancing these torques yields a prediction on the
critical velocity above which the instability appears. This theoretical value is found
to depend on the position of the gravity center of the projectile and predicts with a
full agreement the behaviour observed in our different experiments.

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