

Bending It Like Bernoulli¹

The colored “strings” you see represent air flow around the soccer ball, with the dark blue streams behind the ball signifying a low-pressure wake. Computational fluid dynamics and wind tunnel experiments have shown that there is a transition point between smooth and turbulent flow at around 30 mph, which can dramatically change the path of a kick approaching the net as its speed decreases through the transition point. Players taking free-kicks need not be mathematicians to score, but knowing the results obtained from mathematical facts can help players devise better strategies.

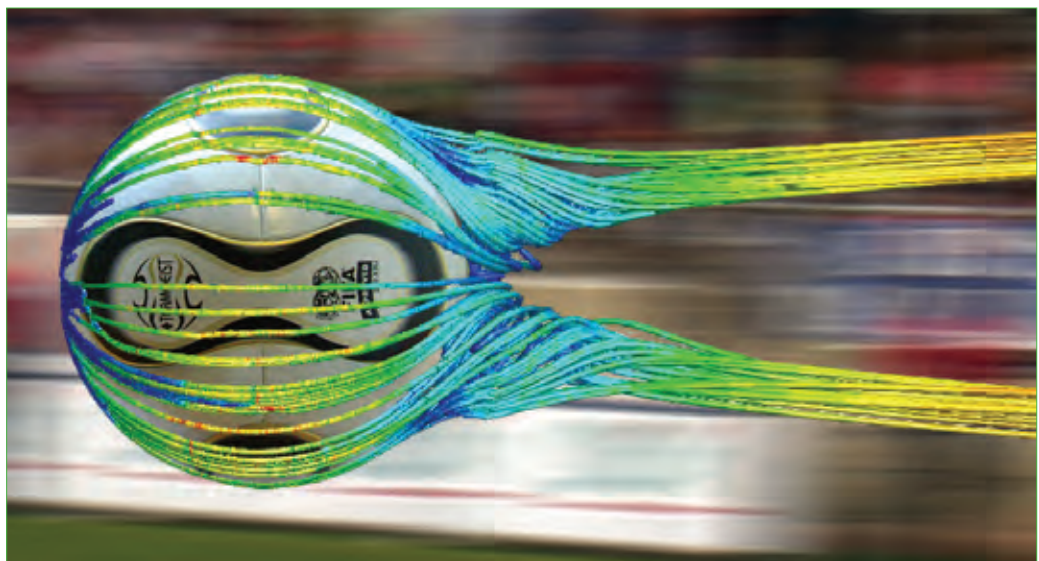


Image courtesy of the University of Sheffield and Fluent, Inc.

For More Information: “Bending a Soccer Ball with CFD,” Sarah Barber and Timothy P. Chartier. SIAM NEWS, July/August 2007.

¹ Daniel Bernoulli (BurrNOOlee) was a Swiss mathematician who did pioneering work in fluid flow.



The **Mathematical Moments** program promotes appreciation and understanding of the role mathematics plays in science, nature, technology, and human culture.