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Issue 52

In this issue...

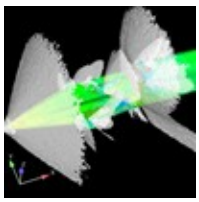
Understanding uncertainty: Football crazy
On May 22nd 2009 the English Premier league had one more match day ahead, with West Bromwich Albion at the bottom of the league and Manchester United at the top, sure to remain there. Taking up a challenge from a BBC radio programme, **David Spiegelhalter** and **Yin−Lam Ng** used their statistical finesse to predict the outcome of the last matches and they were 90% correct. Find out how they did it.

Juggling, maths and a beautiful mind
Many mathematicians find the pure and tight patterns of juggling as irresistible as those of mathematics. **Burkard Polster** explains how to get to grips with the bewildering range of juggling possibilities and invites you to do your own virtual juggling.

The story of the Gömböc
A Gömböc is a strange thing. It looks like an egg with sharp edges, and when you put it down it starts wriggling and rolling around as if it were alive. Until quite recently, no−one knew whether Gömböcs even existed. Even now, **Gábor Domokos**, one of their discoverers, reckons that in some sense they barely exists at all. So what are Gömböcs and what makes them special?

Secrets from a bathroom floor

Tilings have adorned buildings from ancient Rome to the Islamic world, from Victorian England to colonial Mexico. But while it sometimes seems free from worldly limitations, tiling is a very precise art, where not much can be left to chance. We can push and turn and wiggle, but if the maths is not right, it isn't going to tile. **Josefina Alvarez** and **Cesar L. Garcia** investigate.



Supersonic Bloodhound

In 1997 Andy Green was the first to break the sound barrier in his car Thrust SSC, which reached speeds of over 760mph. Now he and his team want to push things even further with a car called Bloodhound, designed to reach the dizzy heights of 1,000mph, about 1.3 times the speed of sound. **Ben Evans** explains how maths is used to build this car.

What is financial mathematics?

Tim Johnson was drawn into financial maths, not through an interest in finance, but because he was interested in making good decisions in the face of uncertainty. Tim explores the development of this interface between abstract mathematics and our everyday lives, and explains why a painting may only be worth its wall space.

Career interview: The fastest mathematician on Earth

Andy Green, Royal Air force pilot and Oxford maths graduate, is gearing up to break his own land speed record in Bloodhound SSC, a supersonic car designed to reach speeds of up to 1000mph. He tells *Plus* about

the challenges and the maths behind this engineering adventure.

Teacher package: Graphs and networks

This teacher package brings together all *Plus* articles on graph and network theory. Graphs and networks turn up in many real−life problems, from neuroscience to telecommunications. In the UK curriculum, they make a frequent appearance in the area known as *decision maths*. Our articles explore a wide range of related topics, from simple algorithms to complex network topologies.

Plus is part of the family of activities in the Millennium Mathematics Project, which also includes the NRICH and MOTIVATE sites.