ends with a discussion of known methods for observationally detecting a wraparound universe: matching identifiable sources in different directions on the celestial sphere, cosmic crystallography and matched circles in the sky. The second part consists of short chapters with extra details and side remarks, including an afterword chapter added to the 2001 edition, in which Luminet discusses the constraints placed by the Wilkinson Microwave Anisotropy Probe on the topology and size of wraparound universes and passionately presents his arguments for their continued viability on larger distance scales.

Like a wraparound universe, there are multiple paths for the reader to follow through this book. Passages from the main narrative are linked to related passages in the second section by arrows in the margins. These, in turn, link both to other passages in the second section and back to the main narrative. A linear progression through the two sections provides an accessible and enjoyable introduction to wraparound universes for general readers. However, those already familiar with aspects of cosmology and/or topology may prefer to skip from one chapter to another, either following an indicated path or not, as desired.

Yet the question remains, is our Universe spatially finite or infinite? As pointed out by Luminet, observational data conclusively rule out small wraparound universes, but cannot rule out certain larger ones, such as the Poincaré dodecahedral universe. In fact, a wraparound universe might explain features of the cosmic microwave background radiation observed at large angles. Fortunately, the European Space Agency's cosmic microwave observatory, Planck, launched on 3 May 2009, will soon provide new data of higher sensitivity and resolution than previous observations. Thus, we may soon learn whether or not wraparound universes are observationally ruled out. Nonetheless, this book will remain an entertaining and informative discussion of an important aspect of contemporary cosmology from an expert in the field. ❐

REVIEWED BY KRISTIN SCHLEICH

Kristin Schleich is in the Department of Physics and Astronomy, University of British Columbia, 6224 Agricultural Road, Vancouver, British Columbia, V6T 1Z1, Canada.
e-mail: schleich@physics.ubc.ca

Dance yourself dizzy

BALLET

I almost don't want to say anything about it. David Bintley's new work for Birmingham Royal Ballet has such impact that I wouldn't want to spoil the surprise.

This amazing creation is inspired by the work of — who else? — Albert Einstein. Specifically, it was David Bodanis' book *E=mc²: A Biography of the World's Most Famous Equation* that was the source of Bintley's desire to develop "movement patterns based on gravity, apparent chaos, extremes of speed and slowness". But these mere words don't do it justice — it is a truly exhilarating achievement, and extremely moving, with the beauty of the dance matched exquisitely to Matthew Hindson's engrossing score.

BILL COOPER

The ballet indeed shares its name, *E=mc²*, with that world-famous equation. The cosmic frenzy of the opening movement climaxes and gives way to a serene, confined second, more suggestive of atomic order. The final exuberant section is performed in front of a bank of spotlights, and as the array of dancers spin and tilt like tops, they create a terrific optical effect. It's brilliant and it makes you feel good to be a physicist.

But what's haunting me is the interlude performed by a lone Japanese dancer, emerging from darkness in a white kimono and moving so gently, then suddenly to the accompaniment of a blast of sound that rumbles and crackles and hisses. *E=mc²* indeed. But the delicate, wistful dance goes on.

Birmingham Royal Ballet, which is directed by Bintley, offers *E=mc²* as part of a treble bill called *Quantum Leaps*, sandwiched between Stanton Welch's *Powder* (to Mozart's clarinet concerto) and Garry Stewart's *The Centre and its Opposite*. This last is set to an electronic soundscape devised by Huey Benjamin, and the contrast from one end of the programme to the other couldn't be greater: Bintley has described Stewart's harsh, contemporary work as "probably the most extreme piece that we have ever done." I'd aver that *E=mc²* is probably one of the best. ❐

REVIEWED BY ALISON WRIGHT

■ *Quantum Leaps* was performed at Sadler's Wells, London, on 10–11 November 2009.