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### How being slim may help our universe to survive

08 October 2005

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OUR universe probably owes its survival to the fact that it is skinny - but not too skinny.

In the bizarre picture of the cosmos called braneworld, an offshoot of string theory, our three-dimensional universe is merely a membrane floating around in a nine-dimensional space. Many other branes with different numbers of dimensions should also have been created in the big bang.

But Andreas Karch from the University of Washington, Seattle, and Lisa Randall of Harvard University point out that high-dimensional branes are likely to hit each other, and when a brane meets an anti-brane they are both annihilated. Slender 3-branes like ours are far less likely to collide, so they survive.

The dilution that occurs as the 9D space expands in every direction also has a bigger effect on low-dimensional branes than on the high-dimensional kind. So while high-dimension branes suffer mostly from annihilation, low dimension branes suffer mostly from dilution - and mid-dimension branes suffer from both.

The upshot is that if other universes exist, they probably have either three space dimensions like ours, or seven, say Karch and Randall, who have a paper describing their calculations in press at the journal *Physical Review Letters*.

From issue 2520 of New Scientist magazine, 08 October 2005, page 20

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