

GEOMETRY AND TOPOLOGY

- *Topology*: Study and classification of “shapes” of “objects” or “spaces” — where two shapes are the same if one can be “deformed” into the other.

Geometry: Study of distance, size, curvature on “objects”.

The objects may be physical objects, or mathematical abstractions used to study ideas in physics, robotics, cosmology, biology, etc.

- Geometry first used to lay out fields, build and design temples, etc.
- First studied systematically by the Greeks circa 500BC – 300BC. Pythagoras, Euclid’s Elements.

- One studies 2D and 3D objects, and higher dimensional objects.

Even some 2D surfaces require 4D space for them to be “optimally” realised or imbedded.

Contemporary theories of the universe model it as 10 or 11 dimensional.

The space of all positions of a hinged arm is most naturally seen as, for example, a 6D curved space.

- We will discuss ancient and contemporary developments, up to something only now being completed and considered perhaps the greatest intellectual achievements of the last 10 years in any area of science.

- Morning tea, 10.30am, outside lecture room
Lunch, 12.00pm, MSI common room.
Afternoon tea, 3.30pm, outside lecture room.