The Yang-Mills equations were written down in 1954 by physicists C-N Yang and R. Mills, in a study of the strong interaction in particle physics. The equations are generalizations of Maxwell’s equations in electro-magnetism, which also appear on the wall. Mathematically, the relevant concept is that of a connection on a fibre bundle, a notion in differential geometry which crystalized at about the same time (although these developments were initially independent, and it was some years before the parallels were understood). One key feature is the introduction of an internal symmetry group, or gauge group, G in the theory. In geometric language this is the structure group of the fibre bundle. We imagine having at a point in space (or space-time) an object which can be transported along a path in space. When the path is a loop, the transport can bring the object back to a different state, but the difference is given by the action of the group G. A case which arises in classical differential geometry is when the “space” is a curved surface and the objects are unit tangent vectors to the surface, but in general one considers bundles made up of more abstract objects. In the equations, the term A denotes the connection on a bundle and F is the curvature of the connection. If the group G is not commutative then the relation between the connection A and curvature F is non-linear, with a quadratic term [A,A]. In the special case of electromagnetism the relevant group is the circle which is commutative, so this non-linearity does not arise. The non-linearity means that the connection cannot be eliminated from the equations, as happens in electromagnetism. The other equation of the pair is the Euler-Lagrange equation for the Yang-Mills action functional. These equations have had a profound impact on many developments in geometry over the past half-century and the ideas are a crucial part of the standard model in elementary particle physics.