

# ICTP DIPLOMA PROGRAMME IN MATHEMATICS 2014-15

## Algebraic Topology

Q. Chen (20 lectures : 30 hrs)

- Retraction and deformation retraction
- Construction of new manifold out of old (suspension, quotient spaces etc)
- CW complex
- Covering spaces
- Real/complex projective spaces
- Fundamental group
- van Kampen theorem
- Homotopy equivalence
- Simplicial/singular homology
- Cellular homology
- Excision property, Mayer-Vietoris sequence
- Relative homology
- Euler characteristic
- Homology with coefficients
- Moore spaces
- The Künneth formula for the homology of the product of two spaces