Selected topics in geometric analysis

Abstract

- Riemannian manifolds.
- Curvatures: Riemann, Ricci, Scalar, Sectional.
- Conformal changes of metrics: the Yamabe problem.
- Hypersurfaces: the Second Fundamental Form and the σ^k-curvatures.
- Gauss and Codazzi equations.
- Minkowski formulas in real Space Forms.
- The Mean Curvature and some rigidity results:
    - Jellett's theorem;
    - Aleksandrov's theorem (part I, moving planes: PDEs approach);
    - Aleksandrov's theorem (part II, alternative proof by Reilly: integral approach).
- Eventually some generalizations to sub-Riemannian manifolds.

Bologna, October 2016

Martino Vittorio