THE SIGNATURE OPERATOR ON GENERAL MANIFOLDS
JOCHEN BRUNING (HUMBOLDT UNIVERSITY)

Abstract: First I review the Signature Theorem as proved by Hirzebruch in 1956 for closed manifolds and explain its beautiful structure, drawing simultaneously on topology, analysis and geometry. Next I will present examples which make it desirable to extend this theorem to a variety of general (i.e.: non compact) manifolds. Then I take a closer look at what is to be proved in a general setting, now led mostly by analysis, from which discussion the notion of pseudomanifold will emerge. Finally, I report about some recent results for these spaces established on the road to a more general Signature Theorem.