Bernhelm Booß-Bavnbek
50 years of Atiyah-Singer index theory - Summary and recollections

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In May 1963, the Bulletin of the American Mathematical Society published a 12 pages announcement by M.F. Atiyah and I.M. Singer that they had found and proved a formula for the index of elliptic operators. In the seminar, I shall outline the content of the formula in its different versions; comment on the various proof strategies; explain some of the predecessors, going back to Niels Abel's work of 1826 on the numerical complexity of elliptic integrals; summarize the most spectacular applications of index theory in low-dimensional topology; and conclude with a personal view upon the inherent limitations of index theory.

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