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semi-Fredholm operator

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A **semi-Fredholm operator** is a bounded operator between Banach spaces that has a finite dimensional kernel or cokernel, and closed range. There are two semigroups of semi-Fredholm operators: upper semi-Fredholm operators (those which have finite dimensional kernels), and lower semi-Fredholm operators (those which have finite dimensional cokernels). A semi-Fredholm operator that is both upper and lower is Fredholm. If an operator is homotopic through (a norm continuous path of) semi-Fredholm operators to a Fredholm operator, then it is Fredholm.