

Spectral aspects of eventually positive C_0 -semigroups

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The theory of positive one-parameter semigroups is rich and has applications in various mathematical fields. A closely related notion that appeared recently is that of *eventually positive* semigroups, i.e., semigroups that become (and stay) positive for sufficiently large times. A systematic study of this concept revealed that such semigroups exhibit spectral properties similar to those already known for positive semigroups.

We start with a few examples of eventually positive semigroups and then highlight several spectral theoretic behaviours of this notion. We follow this up with criteria for *strong convergence* of an eventually positive semigroup. Further, we look at a characterization of convergence of eventually positive semigroups in the operator norm which generalizes a result that was previously only known for positive semigroups.

Towards the end, we look at some spectral and convergence implications of *locally eventual positive* semigroups. In a loose sense, this means that the solution of the corresponding Cauchy problem becomes positive in a part of the domain for large times. While examples of this concept have been known for quite some time, a systematic study of it has only been recently initiated.

References

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