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Kolmogorov operators on noncompact metric graphs

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Abstract :

In this talk we first prove the existence of a classical solution to a class of parabolic problems with unbounded coefficients on noncompact metric graphs subject to Kirchhoff-type conditions. The result is applied to the Ornstein-Uhlenbeck and the harmonic oscillator operators on metric star graphs. We give an explicit formula for the associated Ornstein-Uhlenbeck semigroup and give the unique associated invariant measure. We show that this semigroup inherits the regularity properties of the classical Ornstein-Uhlenbeck semigroup on \mathbb{R} and compute its spectrum.