Hermitian, Pseudo-Hermitian and PT-symmetric Hamiltonians on graphs and singular spaces. Geometrical, asymptotical and statistical properties of the time-dependent Schrödinger equation.

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We study time dependent Scrödinger equations on graphs and singular spaces; the latter are obtained from graphs via replacing vertices by 2D or 3D manifolds. The corresponding Hamiltonians are defined with the help of extension theory and supposed to be either Hermitian or Pseudo-Hermitian or PT-symmetric. We describe the evolution of the localized (squeezed) initial state. Semi-classical behavior of the wave function appears to be connected with the structure of geodesics on the manifolds. Calculation of the number of wave packets can be reduced to well known problems of the analytic number theory.