In this talk I will review some results on eigenfunctions and spectrum of quasi-periodic Schrödinger equation obtained in recent works with Wilhelm Schlag. We consider the regime of exponentially localized eigenfunctions, which means that the Lyapunov exponent of the Schrödinger cocycle is positive. In particular I will discuss the relations between the zeros in the complexified phase space of the characteristic polynomial of the problem on a finite interval and to so-called resonances of the problem, and why the later ones are responsible for the creation of the gaps in the spectrum of the equation. (Received March 01, 2006)