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UNIVERSITY OF TORONTO, TORONTO, ONTARIO M2S 2E4, Canada. *Resonances and  
creation of gaps in the spectrum of quasi-periodic Schrodinger equation.*

In this talk I will review some results on eigenfunctions and spectrum of quasi-periodic Schrodinger equation obtained in recent works with Wilhelm Schlag. We consider the regime of exponentially localized eigenfunctions, which means that the Lyapunov exponent of the Schrodinger 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)