

**KAM-LIOUVILLE THEORY FOR QUASI-PERIODIC COCYCLES  
WITH VALUES IN  $SL(2, \mathbb{R})$**

RAFAEL KRIKORIAN

We prove that given any irrational frequency  $\alpha$  on the one dimensional torus  $T$ , the Schrödinger cocycle associated to an analytic potential on  $T$  above the rotation by  $\alpha$ , is conjugated to an  $SO(2, R)$ -valued cocycle (and hence bounded) provided the potential is small enough and the rotation number of the cocycle satisfies a diophantine condition w.r.t.  $\alpha$ . When  $\alpha$  is fixed, the theorem holds for a set of positive measure of the energy. This is an extension of a theorem of Dinaburg and Sinai to the case where  $\alpha$  is not diophantine. The technique of the proof is based on a perturbative scheme, reminiscent of KAM theory but that applies for any  $\alpha$  irrational. This is a joint work with Artur Avila and Bassam Fayad.