

Workshop “Mathematical aspects of quantum chaos”  
**Atelier «Aspects mathématiques du chaos quantique»**  
June 2-6, 2008/**2 au 6 juin 2008**

## Non-concentration near hyperbolic orbits and applications

Hans Christianson  
*2-304 Mathematics Department*  
*Massachusetts Institute of Technology*  
*77 Massachusetts Avenue*  
*Cambridge, MA 02139-4307*  
*USA*

`hans@math.mit.edu`

### **Abstract**

We consider a semiclassical pseudodifferential operator,  $P(h)$ , on a compact manifold when the classical flow has a semihyperbolic periodic orbit. We prove a microlocal estimate near the orbit, and as our main application, conclude a logarithmic lower bound on the mass of eigenfunctions away from the orbit. For the proof of the estimate we construct the quantum monodromy operator  $M$  associated to the periodic orbit, and indicate how estimates on  $M$  provide estimates on  $P(h)$ . If there is time, we will discuss several applications to other PDE.