1085-60-283 **Igor Rumanov*** (igor.rumanov@colorado.edu), University of Colorado at Boulder, Department of Mathematics, Boulder, CO 80302. *Hard edge for beta ensembles and Painleve III.*

Starting from the diffusion equation at beta random matrix hard edge obtained by Ramirez and Rider (2008), we study the question of its relation with Lax pairs for Painleve III. The results are in many respects similar to the ones found for soft edge by Bloemendal and Virag (2010). In particular, the values beta = 2 and 4 (but not beta = 1) allow for a simple connection with Painleve III solutions and Lax pairs, however, there is an additional surprise. Besides, our considerations can be extended to the other Painleve equations since the corresponding diffusions are in fact known as quantum Painleve Hamiltonians. (Received September 11, 2012)