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Jeffery C DiFranco* (difranco@seattleu.edu), Department of Mathematics, Seattle University, 901 12th Ave, P.O. Box 222000, Seattle, WA 98122. *Asymptotics of Tracy-Widom distributions for the largest detected eigenvalues of random matrices.*

The Tracy-Widom distribution functions appear in numerous areas of combinatorics and probability. In particular these functions are the limiting distributions of the largest eigenvalues of the GUE, GOE and GSE random matrix ensembles. These functions can be expressed in terms of an integrals starting at positive infinity of a Painlevé II function. Using the steepest descent method for Riemann-Hilbert problems we are able to represent these functions, in terms of integrals starting at negative infinity of the same Painlevé functions. This new representation will be suitable for calculating the asymptotics of the Tracy-Widom functions near negative infinity. I will discuss on-going work concerning the asymptotics for the Tracy-Widom distributions for the largest eigenvalue when each eigenvalue is detected with a certain probability $p \neq 1$. (Received September 02, 2009)