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Hernán Castro, Juan Dávila and **Hui Wang*** (huiwang@math.rutgers.edu), Department of Mathematics, Rutgers University, 110 Frelinghuysen Road, Piscataway, NJ 08854. *A Hardy type inequality for $W_0^{m,1}$ functions with $m \geq 2$.*

It is well-known that the classical Hardy's inequality holds only for $p > 1$. In other words, Hardy's inequality fails for $W_0^{1,1}$ functions. However, if we allow one more derivative, i.e., consider $W_0^{2,1}$ functions, we will be able to establish a Hardy type inequality. In this talk, we will discuss both the one dimensional case and the higher dimensional case, and will see the differences between them. (Received September 10, 2013)