1106-VK-981 **Joshua Kaminsky** and **Yunfeng Hu*** (yhu@math.wsu.edu), 1610 NE Wheatland Dr, Apt 5, Pullman, WA 99163. *Roughing It: When Convolution isn't Smooth.*

It's a well known result that for a smooth function ϕ, and another function f, $\phi * f$ is smooth even if f is quite bad. However, even in cases where neither ϕ nor f is smooth, convolution is still a smoothing operator. In particular, we can find f and g such that $f * g$ is smooth even when f and g are characteristic functions. We'll also talk more generally about the case where f and g are characteristic functions on sets with smooth boundaries. (Received September 09, 2014)