Density deconvolution under general assumptions on measurement error distribution

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Abstract. In this talk we study the problem of density deconvolution under general assumptions on the measurement error distribution. Typically deconvolution estimators are constructed using Fourier transform techniques, where it is assumed that the characteristic function of the measurement errors does not have zeros on the real line. This assumption is rather strong and is not fulfilled in many cases of interest. We develop a methodology for constructing optimal density deconvolution estimators in the general setting that covers vanishing and non-vanishing characteristic functions of the measurement errors. We derive upper bounds on the risk of the proposed estimators and provide sufficient conditions under which zeros of the corresponding characteristic function have no effect on estimation accuracy. Moreover, we show that the conditions derived are in a sense unavoidable.