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# On the estimation of a monotone conditional variance in nonparametric regression

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**Abstract** A monotone estimate of the conditional variance function in a heteroscedastic, nonparametric regression model is proposed. The method is based on the application of a kernel density estimate to an unconstrained estimate of the variance function and yields an estimate of the inverse variance function. The final monotone estimate of the variance function is obtained by an inversion of this function. The method is applicable to a broad class of nonparametric estimates of the conditional variance and particularly attractive to users of conventional kernel methods, because it does not require constrained optimization techniques. The approach is also illustrated by means of a simulation study.

**Keywords** Nonparametric regression · Heteroscedasticity · Variance function · Monotonicity · Order restricted inference