Martingale approximations for processes with nonlinear growth of variances

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In their paper from 2004, Wei Biao Wu and Michael Woodroofe introduced a simple condition which implies that partial sums of a stationary process can be approximated by a triangular, row-wise stationary array of martingale differences. This result gives a martingale approximation also for processes whose variances grow in a nonlinear way. We shall study supplementary conditions which imply a central limit theorem.