CONFIDENCE SETS FOR A CHANGE-POINT

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Three methods are described to obtain confidence sets for the change-point in a finite sequence of independent normal random variables with unit variance. For the simpler case of Brownian motion with known means, it is shown that inverting the likelihood ratio test is considerably more efficient than a method based directly on the distribution of the maximum likelihood estimator. Since the likelihood ratio method does not in general yield an interval, a modification is proposed, which always gives an interval and is slightly less efficient. A conditioning argument is given to deal with the case of unknown means. Approximations for the probability calculations required by the likelihood ratio method are given and compared with Monte Carlo values to demonstrate their accuracy. Details appear in Siegmund (1986, Ann. Statist.).