DeLong, DeLong, and Clarke-Pearson (1988) have described a non-parametric analytic method for estimating the covariance between two Wilcoxon statistics that are based on the same cases. The covariance between  and  can be estimated using (their Eqn. 3 and Eqn. 4):

|  |  |
| --- | --- |
|  | A1 |

Here, and are defined by

|  |  |
| --- | --- |
|  | A2 |

The expectation values on the right hand side were estimated by summing over all values of the case indices, subject to the relevant inequality (if any), and dividing by the number of summed terms. Specifically,

|  |  |
| --- | --- |
|  | A3 |