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SigWinR; the SigWin-detector updated and ported to R

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ADDITIONAL FILE 1 TO SIGWINR; THE SIGWIN-DETECTOR
UPDATED AND PORTED TO R

The formula describing the probability that a sample of size S from a sequence of ranks with length N has median r . The derivation of the equation for odd window size can be found in Inda et al.

- N : sequence length
- S : window size
- r : median of values in windows
- $\hat{f}(r)$: probability sample of size S from N elements has median r

If S is odd:

$$\hat{f}(r) = \frac{\binom{r-1}{W} \binom{N-r}{W}}{\binom{N}{S}} \text{ where } W = \frac{s-1}{2}$$

If S is even the median is defined as the mean of the middle two elements of the ordered sequence.

$$\hat{f}(r) = \sum_{d=d_{Min}}^{d_{Max}} \frac{\binom{r-d-1}{W} \binom{N-d-r}{W}}{\binom{N}{S}} \text{ where } W = \frac{s-2}{2}$$

The values of d_{Min} and d_{Max} depend on the value of r :

If r is integer (the middle elements are both even or both odd):

$$\begin{aligned} d_{Min} &= 1 \\ d_{Max} &= \min(N - r - w, r - w - 1) \end{aligned}$$

If r is non-integer (there is an even and an odd middle element):

$$\begin{aligned} d_{Min} &= 1/2 \\ d_{Max} &= \min(N - r + 1/2 - w, r + 1/2 - w - 1) \end{aligned}$$