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Linkage disequilibrium in populations of variable size

We consider neutral evolution of a large population subject to changes in its population size to understand how the covariance of gene-histories and linkage disequilibrium are influenced by such population-size fluctuations. Within the coalescent approximation, using the approach employed by [2] and the result of [3], we have obtained an exact expression (see [1]) for the covariance of gene-histories in a population with a population size that randomly jumps between two values. We show under which circumstances an effective-population-size approximation is appropriate, and when it fails. In addition, we identify a parameter regime where two-locus gene-history correlations are well described by a coalescent process with multiple mergers.

References

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