

ALGORITHM FOR MINIMUM LATERALLY ADIABATICALLY-REDUCED FISHER INFORMATION

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Abstract

The paper observes that consistent lateral motion of probability within a probability density does not affect the Shannon entropy, i.e. that such movement of probability is an adiabatic or entropy-preserving operation. Next it is observed that if such motion removes “kinks” in a probability density, it decreases the Fisher information. Then it is found that a minimum of Fisher information due to this procedure must result if all kinks are removed by pushing probability laterally toward the origin on the plus side. Finally an algorithm is developed which will effect this operation, and calculate the resulting minimum laterally adiabatically-reduced Fisher information. Examples are worked out to illustrate the algorithm. Applications may include many processes which occur adiabatically, i.e. without entropy increase. Variational problems are also worked out.

Key Words: Fisher information, Shannon entropy