

# An Algorithm in Choosing Significant PCA Components on Expression Microarrays

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## **Abstract**

PCA (Principal Component Analysis) is one of the oldest and best known statistical tools for multivariate analysis. Even in earlier ages, PCA has been applied fruitfully by physicists in solving the motions of rigid bodies in classical mechanics. In the example of the motion of a top, the first principal component (with the largest eigenvalue) of momentum inertia is the direction of the axis around which the top can spin stably. Adopting this insight, we propose an algorithm based on robustness properties to choose statistically significant components of PCA. We will use a Microarray data set to demonstrate this algorithm.