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Homogeneity tests of weighted samples in ROOT

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An important part of data analysis is to verify whether measured data have the same distribution as a simulated MC sample. One of several methods of verification is homogeneity testing. MC samples are usually weighted and therefore homogeneity tests must be generalized. In ROOT, some homogeneity tests of weighted samples are implemented; however, none of them performs well. Moreover, they are limited to be applicable only to binned data samples. Therefore, we implemented several tests in ROOT: Kolmogorov-Smirnov, Cramér-von Mises, and Anderson-Darling which use complete samples' information. Asymptotic properties of these modified tests are compared in a simulation.

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