

Statistical Methods in Particle Physics

Quiz on chapter 2: Probability Distributions

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Dr. Sebastian Neubert (tutorials)**

**Heidelberg University
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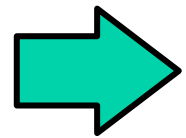
The $\pm 1\sigma$ interval around the mean of a Gaussian corresponds to a probability of about

1. 32%
2. 36%
3. 68%
4. 95%

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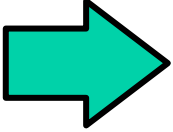
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The Central Limit Theorem states that

1. histograms approach the underlying PDF for $n \rightarrow \infty$
2. that $n!$ can be calculated as $\Gamma(n+1)$
3. a binomial distributions can be approximated by Poisson distribution under certain conditions
4. the sum of n random variables approaches a Gaussian distribution for $n \rightarrow \infty$

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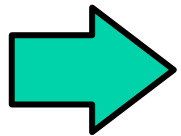
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2. Lorentz distribution
3. logarithmic distribution
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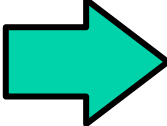
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In particle physics, the mass distribution of a resonance can be described by a

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3. negative binomial distribution
4. χ^2 distribution

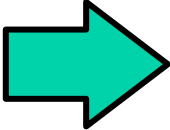
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2. Cauchy distribution
3. Gaussian distribution
4. none of the above

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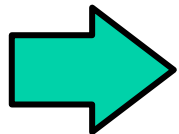
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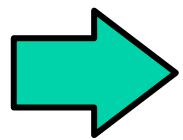
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The expectation value of a χ^2 distribution with n degrees of freedom is

1. n
2. $n(n-1)/2$
3. $n!$
4. n^2

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