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Statistical approach to Clumpy dark matter detectability

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The inflationary production of dark matter (DM) can lead to several interesting scenarios in which DM may be homogeneously distributed or not. We are interested in studying clumpy DM and explore the characteristics of such clumps in a model independent way, orientating the analysis to the detectability of such inhomogeneities. To do so, we simulated a counting experiment and performed a statistical analysis on the resulting power spectrum, we monitored variables like time, number of total detection, clump counting event rate and got as a preliminary estimate that for clumps with overdensity rates of $\lambda_0 \geq 10$ a significance level of $\leq 5\sigma$ for the signal can be reached with $N \approx 200$ total events.

Authors: MONTOYA VELÁSQUEZ, Valentina; Prof. JÄCKEL, Jörg (Heidelberg University)

Presenter: MONTOYA VELÁSQUEZ, Valentina

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