

# Fundamental physics in the cosmos: The early, the large and the dark Universe



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## A new halo independent approach for direct dark matter searches

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Recent results from N-body simulations point towards the existence of non-virialized structures in the dark matter halo. This weakens the assumptions of the Standard Halo Model and increases the need for ways to analyze results of direct dark matter searches without specifying a halo model. We propose a numerical method that compares an arbitrary number of results from direct detection experiments and neutrino telescopes and quantifies the compatibility of those results in a halo independent way. It takes into account the changing alignment of the earth's velocity with respect to the sun's over the course of the year. When applying our numerical method to experimental data, we find that it is important to take into account the impact of the velocity distribution on the interpretation of direct dark matter searches.

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