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Multiple Soft Scatterings in Freeze-In Dark Matter Production

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In this talk, we address the impact of the hot plasma during dark matter production via freeze-in. In particular, we study a model that features a feebly-interacting real scalar and a vector-like mediator. Recent work has shown that, in contrast to freeze-out production in the context of WIMPs, freeze-in production is sensitive to thermal corrections. While previous calculations had not included multiple soft scatterings with the plasma, an effect known as the so-called Landau-Pomeranchuk-Migdal (LPM) effect, we include the LPM effect for the first time in this model and discuss the impact on the prediction of the dark matter relic density.

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