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Contribution ID: 184 Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

## **(G\*) Exploring Direct Detection Suppressed Regions in a Simple 2-Scalar Mediator Model of Scalar Dark Matter**

*Thursday 10 June 2021 11:48 (3 minutes)*

We explore regions of parameter space that give rise to suppressed direct detection cross sections in a simple model of scalar dark matter with a scalar portal that mixes with the standard model Higgs. We found that even this simple model allows considerable room in the parameter space that has not been excluded by direct detection limits.

While a number of effects leading to this result have been previously noted, our main new result explores interference effects between different contributions to DM annihilation when the DM mass is larger than the scalar portal mass. New annihilation channels open up and the parameters of the model need to compensate to give the correct DM relic abundance, resulting in smaller direct detection cross sections.

We find that even in a very simple model of DM there are still sizeable regions of parameter space that are not ruled out by experiment.

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