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The Dark Side of 4321

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The evidence of Dark Matter (DM) is one of the strongest observational arguments in favor of physics beyond the Standard Model. Despite expectations, a similar evidence has been lacking so far in collider searches, with the possible exception of B-physics discrepancies, a coherent set of persistent deviations in a homogeneous dataset consisting of $b \to c$ and $b \to s$ semi-leptonic transitions. We explore the question whether DM and the B discrepancies may have a common origin. We do so in the context of the so-called 4321 gauge model, a UV-complete and calculable setup that yields a U1 leptoquark, the by far most successful single mediator able to explain the B anomalies, along with other new gauge bosons, including a Z'. Adding to this setup a 'minimal' DM fermionic multiplet, consisting of a *4* under the 4321's SU(4), we find the resulting model in natural agreement with the relic-density observation and with the most severe direct-detection bounds, in the sense that the parameter space selected by B physics is also the one favored by DM phenomenology. The DM candidate is a particle with a mass in the WIMP range, freeze-out dynamics includes a co-annihilator (the 'rest' of the *4* multiplet), and the most important gauge mediator in the DM sector is the Z'.

Presenter: GUADAGNOLI, Diego

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