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Leptoquark manoeuvres in the dark: a simultaneous solution of the dark matter problem and the $RD(^*)$ anomalies

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In this talk I plan to discuss how a scalar leptoquark addressing the charged current flavour anomalies can also serve as a mediator to the dark sector. Starting from the parameter space favoured by the flavour fit, I will discuss the constraints from collider searches, dark matter direct detection and the relic density, pointing the delicate interplay between them. Part of the parameter space can accommodate thermal freeze-out (WIMP), but in other regions the “Conversion Driven Freeze-Out” (CDFO) mechanism is the dominant production mode of dark matter in the early Universe.

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