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Resonances + Top partners + Dark Matter

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Top partners and vector/scalar resonances are coupled in an interplaying Composite Higgs framework. The entailed phenomenology is analysed via resonances decay channels and top partners production mechanisms. Recent LHC searches for vector-like quarks production in pp-collisions at 13 TeV have been imposed to exclude regions of the underlying parameter spaces. Furthermore, the WIMP-nucleon scattering cross section in a simple dark matter model and its constraints from the latest direct detection experiment are treated at the loop level. The involved dark matter-mediator masses are constrained by the Xenon1T limit and the neutrino floor. The current direct detection bounds are eluded by invoking the top partners, whose scale mass aids us in properly suppressing the WIMP-nucleon cross section.

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