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## Vector dark matter production at the end of inflation

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It has been shown that the longitudinal mode of a massive vector boson can be produced by inflationary fluctuations and account for the dark matter content of the Universe. In this work we examine the possibility of instead producing the transverse mode via the coupling  $\phi F\tilde{F}$  between the inflaton and the vector field strength. Such a coupling leads to a tachyonic instability and exponential production of one transverse polarization of the vector field, reaching its maximum near the end of inflation. We show that these polarized transverse vectors can account for the observed dark matter relic density in the mass range  $\mu\text{eV}$  to hundreds of GeV. We also find that the tachyonic production mechanism of the transverse mode can accommodate larger vector masses and lower Hubble scales of inflation compared to the production mechanism for the longitudinal mode via inflationary fluctuations.

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