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Laser-assisted processes beyond the standard model

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In this work, we have theoretically studied the neutral Higgs pair production in Two Higgs Doublet Model (THDM) in the presence of a circularly polarized laser field. The laser-assisted differential partial cross section is derived in the centre of mass frame at the leading order including Z diagram. The total cross section is computed numerically by integrating the differential cross section over the solid angle $d\Omega$. Two benchmark points are discussed for the THDM parameters. In the first step, we have analyzed the total cross section of $e^+e^- \rightarrow h_0A_0$ by considering H_0 as the standard model-like Higgs boson. Then, the process $e^+e^- \rightarrow H_0A_0$ is studied by taking h_0 as the Higgs boson of the standard model. For both benchmark points, the laser-assisted total cross section of the studied processes depends on the produced neutral Higgs masses, the centre of mass energy and the laser field parameters. In addition, the maximum cross section occurs at high centre of mass energy for the process $e^+e^- \rightarrow H_0A_0$ as compared to that of $e^+e^- \rightarrow h_0A_0$.

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