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Title:	Measurement of $\eta_c(1S)$ , $\eta_c(2S)$ , and nonresonant $\eta'\pi^+\pi^-$ production via two-photon collisions
Authors:	Bhardwaj, V. (/jspui/browse?type=author&value=Bhardwaj%2C+V.)
Keywords:	$\eta_c(1S)$ $\eta_c(2S)$ nonresonant $\eta'\pi^+\pi^-$ production two-photon collisions
Issue Date:	2018
Publisher:	American Physical Society
Citation:	Physical Review D, 98(7).
Abstract:	We report the measurement of $\gamma\gamma\rightarrow\eta_c(1S),\eta_c(2S)\rightarrow\eta'\pi^+\pi^-$ with $\eta'$ decays to $\gamma\rho$ and $\eta\pi^+\pi^-$ using 941 fb $^{-1}$ of data collected with the Belle detector at the KEKB asymmetric-energy e $^+$ e $^-$ collider. The $\eta_c(1S)$ mass and width are measured to be $M=[2984.6\pm0.7(\text{stat})\pm2.2(\text{syst})\pm0.3(\text{model})]$ MeV/c $^2$ and $\Gamma=[30.8\pm2.3\pm2.2(\text{stat})\pm2.5(\text{syst})\pm1.4(\text{model})]$ MeV, respectively. First observation of $\eta_c(2S)\rightarrow\eta'\pi^+\pi^-$ with a significance of $5.5\sigma$ including systematic error is obtained, and the $\eta_c(2S)$ mass is measured to be $M=[3635.1\pm3.7(\text{stat})\pm2.9(\text{syst})\pm0.4(\text{model})]$ MeV/c $^2$ . The products of the two-photon decay width and branching fraction (B) of decays to $\eta'\pi^+\pi^-$ are determined to be $\Gamma\gamma\Gamma\gamma B=[65.4\pm2.6(\text{stat})\pm7.8(\text{syst})]$ eV for $\eta_c(1S)$ and $[5.6\pm1.2\pm1.1(\text{stat})\pm1.1(\text{syst})]$ eV for $\eta_c(2S)$ . The cross sections for $\gamma\gamma\rightarrow\eta'\pi^+\pi^-$ and $\eta'f_2(1270)$ are measured for the first time.
Description:	Only IISERM authors are available in the record.
URI:	<a href="https://journals.aps.org/prd/abstract/10.1103/PhysRevD.98.072001">https://journals.aps.org/prd/abstract/10.1103/PhysRevD.98.072001</a> ( <a href="https://journals.aps.org/prd/abstract/10.1103/PhysRevD.98.072001">https://journals.aps.org/prd/abstract/10.1103/PhysRevD.98.072001</a> ) <a href="http://hdl.handle.net/123456789/1824">http://hdl.handle.net/123456789/1824</a> ( <a href="http://hdl.handle.net/123456789/1824">http://hdl.handle.net/123456789/1824</a> )
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