

A contact structure  $\xi$  on a three manifold  $M$  is a completely non-integrable tangent two-plane distribution. A contact structure is called overtwisted if it contains an embedded disk  $D$  such that  $\xi$  is everywhere tangent to  $D$  along  $\partial D$ . Eliashberg [Y. Eliashberg, *Classification of overtwisted contact structures on 3-manifolds*, Invent. Math. **98** (1989), 623-637.] showed that the topologically interesting case to study is tight contact structures. He did this by showing that the classes of overtwisted contact structures correspond to homotopy classes of two-plane distributions on  $M$ . The purpose of this work is to provide a classification of the tight contact structures on  $M = \Sigma_2 \times I$  with a specific dividing set on the boundary  $\partial(\Sigma_2 \times I) = \Sigma_0 \cup \Sigma_1$ . The dividing set we specify on the boundary consists of a single separating curve  $\gamma_i$  on each  $\Sigma_i$ ,  $i \in \{0, 1\}$ . These curves are chosen so that  $\chi((\Sigma_i)_+) = \chi((\Sigma_i)_-)$ . Here,  $(\Sigma_i)_\pm$   $i \in \{0, 1\}$  represent the positive and negative regions of  $\Sigma_i \setminus \Gamma_{\Sigma_i}$ . To do this, we provide a convex decomposition of  $M$  and investigate the possible dividing curve configurations on all cutting surfaces [K. Honda, *Gluing tight contact structures*, Duke Math. J. **115** (2002), no. 3, 435-478. and K. Honda, W. Kazez and G Matić, *Convex decomposition theory*, Internat. Math. Res. Notices (2002), no. 2, 55-88.]. The first obstacle to classification is infinite number of possible dividing sets on the initial annular cut. A series of reduction arguments allow us to conclude the existence of at most two tight contact structures on  $M$ , one of which is equivalent to the product structure. There are two tools used to establish tightness of a glued-up manifold. The standard gluing theorem allows us to conclude universal tightness while the gluing/classification theorem does not. It is necessary to use a state-transition argument and the latter theorem to conclude tightness of the non-product structure on  $M_1 = M \setminus A$  where  $A$  is our initial annular cutting surface. At this point, neither gluing theorem applies. Thus, we adapt the gluing theorem to our purposes and conclude the existence of a unique, non-product tight contact structures on  $M$ .