



# A type of the Lefschetz hyperplane section theorem on $\mathbb{Q}$ -Fano 3-folds with Picard number one and $\frac{1}{2}(1,1,1)$ -singularities

Nam-Hoon Lee

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We prove a type of the Lefschetz hyperplane section theorem on  $\mathbb{Q}$ -Fano 3-folds with Picard number one and  $\frac{1}{2}(1,1,1)$ -singularities by using some degeneration method. As a byproduct, we obtain a new example of a Calabi-Yau 3-fold  $X$  with Picard number one whose invariants are  $(H_X^3, c_2(X) \cdot H_X, \chi(X)) = (8, 44, -88)$ , where  $H_X$ ,  $e(X)$  and  $c_2(X)$  are an ample generator of  $\text{Pic}(X)$ , the topological Euler characteristic number and the second Chern class of  $X$  respectively.

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