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Corresponding to a vertex operator algebra  $V$ , one can attach an associative algebra called Zhu algebra  $A(V)$ . There is also another commutative algebra  $R(V)$  called  $C_2$ -algebra. The commutative algebra  $R(V)$  is in fact a Poisson algebra. Under a certain finite generation assumption, the  $C_2$ -algebra  $R(V)$  defines an affine Poisson variety. These Poisson varieties for special vertex operator algebras have been studied by Arakawa and his collaborators. When  $V$  is  $C_2$ -cofinite, the  $C_2$  algebra is nilpotent (and thus local) and the corresponding Poisson variety is a single point. In this talk we will study the Yoneda cohomology algebra  $Ext_{R(V)}^*(C, C)$ . The motivation of studying the cohomological variety arises from Quillen's work on cohomological varieties of finite groups over a field of positive characteristic. Unlike in the Hopf algebra case, the cohomology algebra under Yoneda product is not graded commutative in general. We will give a definition of what the cohomological variety is. For affine rational VOAs, we determine when the algebra  $R(V)$  is complete intersections. By approximating the algebra  $R(V)$  algebras of complete intersections, we give lower bounds for the dimensions of cohomological varieties of affine rational VOAs. (Received September 21, 2021)