

Axion-like particles (ALPs) appear from spontaneous global symmetry breaking in many extensions of the Standard Model (SM). In this talk, I will show our bounds on ALP model parameters at the LHC from the ALP production associated with a photon and a jet as well as single top and top quark pairs in a model-independent approach. In particular, I will explain that the ALP production associated with a photon plus a jet at the LHC is a promising channel with significant sensitivity to probe the ALP couplings to gluons and electroweak gauge bosons. The prospects are presented at the High Luminosity LHC including a realistic detector simulation and pile up effects. Furthermore, I will talk about the contributions of ALP model to the top quark (chromo)magnetic dipole moments. We have shown that the top quark magnetic and chromomagnetic dipole moments enable us to probe the ALP couplings to top quark and gauge bosons at a time. The constraints are complementary to those obtained from direct searches, as they are sensitive to light ALP.