

# Phenomenology 2015 Symposium



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## Probing Light Stops with Stoponium

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We derive new limits on light stops using resonance searches in the channels of diphoton,  $Z+\text{photon}$ ,  $WW$ ,  $ZZ$  and  $hh$ . Remarkably, we find that stoponium searches are highly complementary to direct collider searches as well as indirect probes such as Higgs coupling measurements and electroweak precision test. The diphoton is most complementary as it is maximally sensitive when the Higgs-stop-stop coupling vanishes and no direct and indirect constraints exist. Interestingly, we also find that the  $Z+\text{photon}$  can give a stronger constraint if the stop is primarily left-handed. We finally discuss relevant parameter space in several SUSY models in which stoponium signatures arise. Our results are based on quarkonium-inspired potential model and first two S-wave states.

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