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## **$\Sigma$ to $p \mu^+ \mu^-$ : Standard Model or new particle?**

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The HyperCP collaboration observed three events for the decay  $\Sigma^+ \rightarrow p \mu^+ \mu^-$ . They suggested that new physics may be required to understand the implied decay rate and the observed  $M_{\mu\mu}$  distribution. Motivated by this result, we re-examine this mode. First within the standard model, and then assuming there is a new particle.

Within the SM we find that  $\Sigma^+ \rightarrow p \mu^+ \mu^-$  is long-distance dominated and its rate falls within the range suggested by the HyperCP measurement. We then examine the conditions under which the observation is consistent with a light Higgs boson and find an explicit example that satisfies all the constraints: the light pseudoscalar Higgs boson in the next-to-minimal supersymmetric standard model, the  $A_1^0$ .

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**Classification de Session:** More heavy flavours