Contribution ID: **113** Type: **Regular Talk (15'+5')**

# Discovering the new physics of (g−2)μ at colliders

*Friday 3 December 2021 09:30 (20 minutes)*

The Fermilab Muon g−2 collaboration has recently released its first measurement of (g−2)μ. This result is consistent with previous Brookhaven measurements and together they yield a statistically significant 4.2σ discrepancy with the Standard Model prediction. BSM solutions to (g−2)μ feature light weakly coupled neutral particles (Singlet Scenarios) or heavy strongly coupled charged particles (Electroweak Scenarios). In recent investigations, it has been shown how a 3TeV muon collider (MuC) can probe all possible Singlet Scenarios, whereas a 30TeV MuC is guaranteed to produce the heavy states in the Electroweak Scenarios under a set of reasonable assumptions. In this talk I will summarise these findings and present new developments. On one hand, a combination of hadron colliders and precision electroweak measurements can probe an important portion of the parameter space in the Singlet Scenarios. This is for heavy singlets in the range between 10 GeV and 1-3 TeV. On the other hand, Electroweak Scenarios where BSM states are too heavy to be produced at any foreseen collider can still be probed by indirect signatures at a MuC. One example in the literature is Higgs+gamma production at a 30TeV MuC. Here, we probe the heaviest Electroweak Scenarios for (g−2)μ looking at di-Higgs production at a 10TeV MuC.

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**Session Classification:** Theory - Phenomenology

**Track Classification:** Theory - Phenomenology