CRC 1624 HIGHER STRUCTURES, MODULI SPACES AND INTEGRABILITY

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Fusion category and S-matrix

I will show that categorical symmetries --- a refined notion of symmetry that has been actively discussed in the past few years --- sometimes lead to a surprising consequence on scattering amplitudes: a modification of crossing symmetry. I will demonstrate this using example of integrable field theories in 1+1 dimensions although the argument holds more generally; namely, also for non-integrable theories. I will also present the results of S-matrix bootstrap, which constrains the space of physically consistent scattering amplitudes with categorical symmetries.