

**From:** [Miller, Carl A. \(Fed\)](#)  
**To:** [Breiner, Spencer J. \(Fed\)](#)  
**Subject:** Re: Abstract  
**Date:** Tuesday, November 14, 2017 2:06:19 PM

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I posted it, thanks.

-Carl

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On 11/14/17, 11:13 AM, "Breiner, Spencer J. (Fed)" <[spencer.breiner@nist.gov](mailto:spencer.breiner@nist.gov)> wrote:

Sorry for the delay.

Spencer

Syntax & Semantics in Quantum Information

In this talk I will discuss some additional aspects of Coecke & Kissinger's diagrammatic language for quantum processes. I will begin with a brief review of string diagrams and quantum ("doubled") processes. I will introduce Frobenius algebras together with their diagrammatic analogues, called spiders. These can be used to encode orthonormal bases, providing a means for describing measurement and encoding. This allows us to incorporate both quantum and classical data, as well as their interaction, into the diagrammatic formalism.