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Philosophy and history of QFT

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I will survey a few topics in philosophy and history of QFT that are relevant to RQI, and then focus on a central topic: the Measurement Problem. In non-relativistic QM, one version of the Measurement Problem is that the measurement theory (i.e., the Born rule and state update rules) cannot be derived from the application of the dynamics (e.g., Schrodinger equation) to a measurement scenario. Recent work on local measurement theories for QFT introduces new relativistic state update rules and relies on relativistic representations of the dynamics in QFT. As a result, the Measurement Problem takes a different form in QFT than in non-relativistic QM. This is of interest because a satisfactory interpretation of quantum theory must solve the Measurement Problem.

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