



POS-12 - Visualization of state determination via weak measurements

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Visualization of state determination via weak measurements

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Recently the weak measurement expression $A_w = (\langle \psi | A | \phi \rangle) / (\langle \phi | \phi \rangle)$ and its modification were used in state determination of an unknown state [e.g. 1,2]. In this note a visualization is given of the weak values of an unknown state $\rho_w = (\langle \psi | \rho | \phi \rangle) / (\langle \phi | \phi \rangle)$, where ρ is the unknown state ($\rho \geq 0, \text{tr}(\rho) = 1$), following the visualisation presented in [3]. An attempt is made to apply it to the state determination of a two level system (C2,) comparing the standard state determination and the weak value state determination. Also, an excursion into C3 is made. Assuming that each weak value needs two measurement, for real and imaginary part, and that the measurements are not sequential, it is not clear if any advantages, in weak measurement state determination are present [5,6].

[1] Dressel J, et al, arXiv 1305.7154 [quant-ph]

[2] Diaz JJ., et al: arXiv 1602.04073 [quant-ph]

[3] Farinholt, J.M. et al: arXiv 1512.02113 [quant-ph]

[4] Ivanovic I.D. :Phys.LettA, 228 (1997), p329

[5] Haapasalo E., et al : arXiv 1108.3663 [quant-ph]

[6] Gross J.A., et al : arXiv:1506.08892.

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