For Quantum and Reversible Computing, Intervals Are More Appropriate Than General Sets, And Fuzzy Numbers Than General Fuzzy Sets

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Need for faster and faster computing necessitates going down to quantum level – which means involving quantum computing. One of the important features of quantum computing is that it is reversible. Reversibility is also important as a way to decrease processor heating and thus, enable us to place more computing units in the same volume. In this paper, we argue that from this viewpoint, interval uncertainty is more appropriate than the more general set uncertainty – and, similarly, that fuzzy numbers (for which all alpha-cuts are intervals) are more appropriate than more general fuzzy sets. We also explain why intervals (and fuzzy numbers) are indeed ubiquitous in applications.