Sharp Uncertainty Principles and their stability

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The Heisenberg uncertainty principle, which is a fundamental result in quantum mechanics, and related inequalities such as the hydrogen and Hardy uncertainty principles, belong to the family of geometric inequalities known as the Caffarelli-Kohn-Nirenberg inequalities. In this talk, we discuss some recent results about the optimal uncertainty principles, Caffarelli-Kohn-Nirenberg inequalities, and their quantitative stability. The talk is based on recent joint works with C. Cazacu, J. Flynn and G. Lu.