



Mahoney–Neumann–Room Prize
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Janusz Brzdęk

A hyperstability result for the Cauchy equation
Bull. London Math. Soc. **42** (2010), 795–810

The paper proves a hyperstability result for the Cauchy functional equation $f(x + y) = f(x) + f(y)$, which complements earlier stability outcomes of J. M. Rassias. It exploits the fixed point method introduced in J. Brzdęk, J. Chudziak and Zs. Páles, 'A fixed point approach to stability of functional equations', *Nonlinear Anal.* **74** (2011), 6728–6732. The notion of hyperstability for this functional equation (also introduced by J. Brzdęk) is that if a mapping is in some sense 'close' to being additive, is it necessarily 'close' to an additive mapping.

The methods introduced in the paper are presented in a form that has been shown to be widely applicable and has influenced others working in this field with applications to many other functional equations and in more general settings. The fixed point method from Brzdęk, Chudziak and Páles has also been developed in many papers to a number of functional equations and to a number of settings beyond the original setting in Banach space and the application to the Cauchy equation.

This paper continues to be strongly cited as one of a growing number of examples of hyperstability, acknowledging the significance of the early application of the method to the Cauchy equation.