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## Field theorists win Dirac prize

11 August 1998

**The 1998 Dirac Medal has been awarded to Stephen Adler of the Institute for Advanced Study in Princeton and Roman Jackiw of the Massachusetts Institute of Technology for their "sophisticated use of quantum field theory to illuminate physical problems". The award is made every year by the International Centre for Theoretical Physics in Trieste in recognition of outstanding contributions to theoretical physics and mathematics, and is announced on Dirac's birthday - August 8.**

The citation highlights Adler's derivation of a sum rule for pion-nucleon scattering that marked a breakthrough in our understanding of the currents and broken symmetries of the strong interaction. One of Jackiw's major contributions was his discovery (with Rebbi) of fractional charge and spin when field theories are applied to condensed matter physics.

The paths of Adler and Jackiw crossed in the late 1960s when the "Bell-Jackiw-Adler anomaly" was able to explain how a neutral pion could decay into two photons. The decay was forbidden by the so-called PCAC hypothesis but had been observed in experiments. A pair of papers - one by the late John Bell and Jackiw, the other by Adler - showed that radiative corrections caused the PCAC hypothesis to break down. The citation calls this "one of the most profound examples of the relevance of quantum field theory to the real world".

**Further reading**

*Conceptual developments of 20th Century Field Theories* by Tian Yu Cao (Cambridge 1997): [Amazon \(US\)](#) [Bookpages \(UK\)](#)

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