

# Modeling High-Temperature Superconductivity: Correspondence at Bay?

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## Abstract

How does a predecessor theory relate to its successor? According to Heinz Post's General Correspondence Principle, the successor theory has to account for the empirical success of its predecessor. After a critical discussion of this principle, I outline and discuss various kinds of correspondence relations that hold between successive scientific theories. I then look in some detail at a case study from contemporary physics: the various proposals for a theory of high-temperature superconductivity. The aim of this case study is to understand better the prospects and the place of a methodological principle such as the Generalized Correspondence Principle. Generalizing from the case study, I will then argue that some such principle has to be considered, at best, as one tool that might guide scientists in their theorizing. Finally I present a tentative account of why principles such as the Generalized Correspondence Principle work so often and why there is so much continuity in scientific theorizing.

**Keywords:** Theory change, correspondence principle, Bayesianism, high-temperature superconductivity

[General Issues: Confirmation/Induction](#)

[General Issues: Models and Idealization](#)

**Subjects:**

[General Issues: Theory Change](#)

[Specific Sciences: Physics: Condensed Matter](#)

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