

MAR08-2007-000240

Abstract for an Invited Paper
for the MAR08 Meeting of
the American Physical Society

Condensed Matter Theory: From Models to First Principles¹

MARVIN COHEN, University of California, Berkeley

It can be argued that modern condensed matter theory (CMP) started 100 years ago. Models of materials explained many solid state phenomena and properties. However, only in the past 50 years—during the “PRL Era”—can it be argued that a significant number of ab initio calculations for real materials have been done. After some historical comments, the primary conceptual models will be described. This discussion will be followed by examples of current theoretical work on explaining and predicting properties and phenomena associated with “real materials.”

¹This work was supported by National Science Foundation Grant No. DMR07-05941, and the U.S. Department of Energy under Contract No. DE-AC02-05CH11231.