116217 - Solid State Physics

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Abstract

1 Introduction

Phase are distinguished by symmetries, e.g., liquid and solid have difference in transnational symmetry. Those phase transitions happens together with spontaneous symmetry breakage.For example, magnet "chooses" poles when transits to magnetic phase.

1.1 Heat capacity

Most of matereals have $C = 3k_B$, except diamond in room temperature and pressure. In low temperatures though, materials have $C = \alpha T + \gamma T^3$. Thus, most of materials get to saturation in room temperature, while diamond doesn't.