

In Search for Room-Temperature Superconductors under Pressure

The searching for the room-temperature superconductors have been one of the most enthusiastic fields in physics. In my talk, I will give an overview and the most recent status of the conventional superconductors under pressure as pressure exceeded that of the earth's core can be generated in several laboratories around the world. At the present time, the theoretical calculations provide accountable predictions on the structural and electronic properties which can be served as a practical map for experiments. I will give a brief description on the existing theory of superconductivity which leads to the calculations of the superconductivity critical temperature, T_c . The calculations of T_c is stemmed from the so-called spectral function, which can be evaluated from the density functional theory (DFT). In order to obtain insight information and more understanding, I model the spectral function with several simplified model functions. Several types of materials which are the possible candidates for the room-temperature superconductors will be discussed. This simple analysis will give a powerful suggestion on the way to search for a higher value of T_c .

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