



UNIVERSITÀ DI PARMA

Dipartimento di Scienze Matematiche, Fisiche ed Informatiche - DSMFI

SEMINARIO DI DIPARTIMENTO

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Silicon photovoltaics: towards the efficiency limits

Abstract:

Abstract: Solar energy has the largest potential among renewable energy sources, and photovoltaic (PV) power starts to give an appreciable contribution to the energy mix in many countries. The PV market in the world is dominated ($>90\%$) by wafer-based silicon technology and is expanding at a rapid growth rate. The conversion efficiency of silicon solar cells has reached record values ($\sim 26\%$) that approach the theoretical limits. In this talk I shall discuss the basic physics and the efficiency limits for energy conversion in solar cells, the status of the most common PV technologies, and the prospects for further increasing the efficiency of silicon photovoltaics. In particular, I shall emphasize the importance of light trapping and of minimizing nonradiative recombination when using thin (non wafer-based) silicon layers. Recent progress on silicon-based tandem solar cells will also be discussed.



Giovedì 9 novembre – ore 16:30
Aula Newton – Plesso Fisico