



Séminaire M2HA

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Nanotechnology and Solar Cells: The quantum well approach

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Résumé :

The use of nanostructures in photovoltaics offers the potential for high efficiency by either using new physical mechanisms or by allowing solar cells which efficiencies closer to their theoretical maximum, for example by tailoring material properties. In this talk, first the basic physical principles of operation for solar cells are showed. After a brief overview of the different theoretical efficiency limits for the photovoltaic conversion, the need for the incorporation of new physical limits is stated in order to obtain a closer approach or to overcome these limits. The quantum well solar cells are presented together examples of their practical configurations and real conversion efficiencies reached. Finally, a theoretical model for quantum well solar cells is showed and applied to the AlGaAs/GaAs material system.