GREEN'S FUNCTION METHOD FOR SEMICONDUCTOR NANOSTRUCTRURES

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In this talk, a brief introduction will be given on the Green's function method and its potential applications in different areas. Then the state-of-the-art piezoelectric Green's functions and the corresponding Eshelby solutions will be reviewed and discussed. Finally these Green's function-based solutions will be applied to semiconductor nanostructures. Numerical examples will be also presented, which show not only that the Green's function method is indeed very powerful, but also that the piezoelectric coupling can greatly affect the elastic strain and electric field due to the misfit lattice in nanoscale quantum structures. The piezoelectric coupling effect has been ignored in most previous literatures in physics community, and this could results in large error in the prediction of the induced piezoelectric field.