Talk announcement

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Analysis and numerical approximation of a model for heat transfer via interfaces and radiation

Electric machines consist of several components which may not be perfectly in contact. This leads to temperature jumps from one domain to another. In this talk we will focus on modelling heat transfer across such interfaces as well as heat radiation at boundaries. More specifically, we will consider the heat equation on several subdomains seperately and couple it at the interfaces with a condition that relates the heat flux to the temperature jump. On the boundary of the whole domain, Robin boundary conditions combined with Stefan-Boltzmann boundary conditions will be considered. The resulting nonlinear parabolic PDE will be analysed and finite element solutions will be examined. We will also investigate the case if meshes at interfaces do not match and present a Nitsche-type mortaring method to deal with problems arising in this context.