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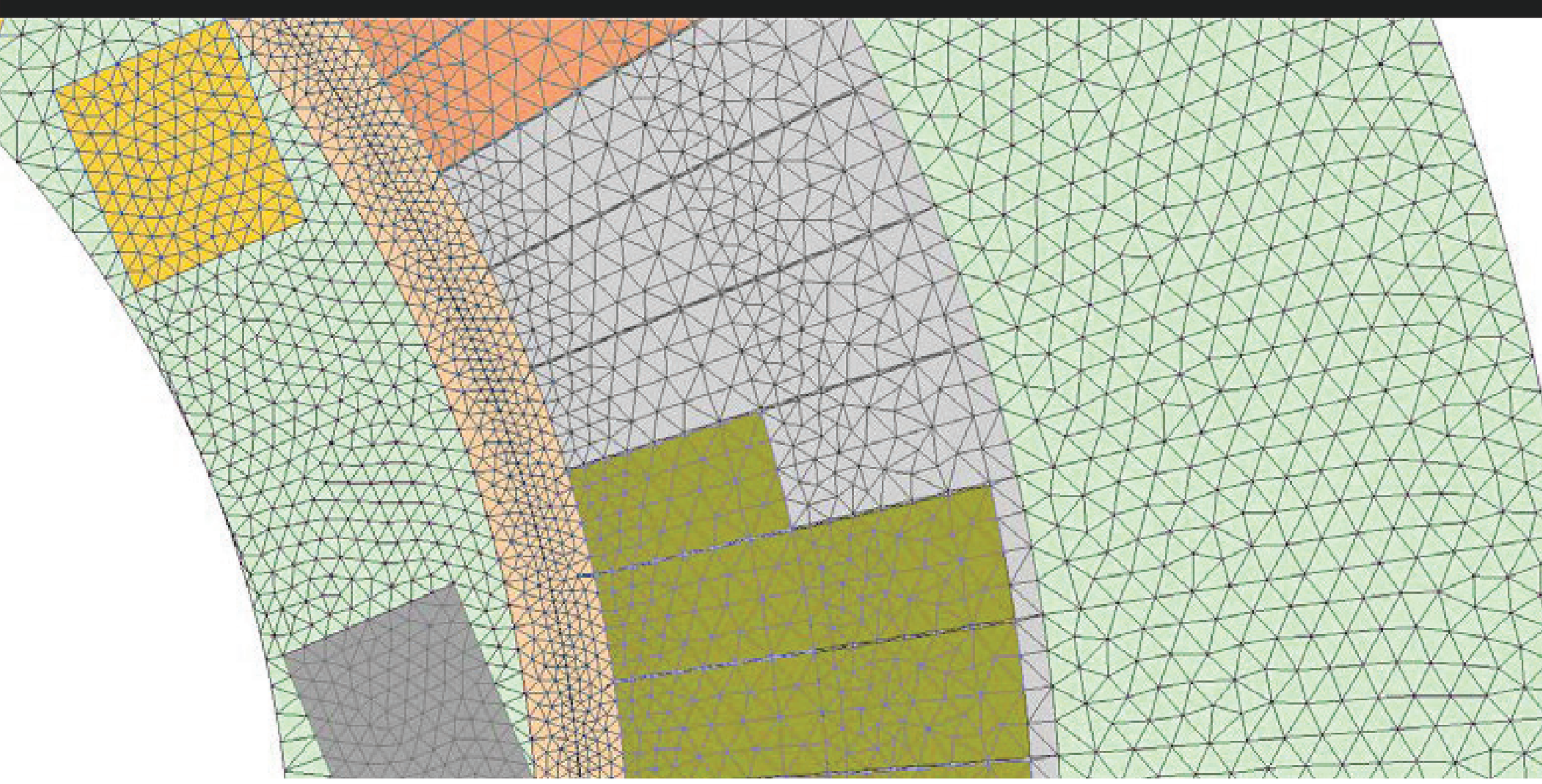
Future of Lightweighting Entry



University of British Columbia

High temperature superconducting Electrical machine

The main objective of this project is to lead in the designing of high temperature superconducting electrical machines (HTS-EM)aimed to break the current boundaries on the prototyping of lighter and more efficient electric vehicle(EV). Electric vehicle technology as a mature part of the green energy generation has been substantially developed in recent decades. Nowadays, according to the increase of population density along with green energy protocols, EVs production have been developed more and more because of higher efficiency. Nevertheless, the weight and volume of the electrical machines are challenging issues and substantially affect the overall weight of the vehicle and hence its cost. Because of significant progress in HTS wire, it is promising to design HTS-EMs with compact design, lower volume and lower mass compared to conventional machines. To illustrate the benefits of this approach, it has been calculated that an HTS-EM would have efficiencies of up to 98%, reducing the weight and volume by about 50%, and with an overall reduction of capital cost of at least 25%. Thus, the proposed project aided designing of revolutionary HTS-EMs, inherently meets the criteria of maximum performance and minimum weight required for the development of the next generations of EVs.

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