

### ***Space- Charge dominated Guns and beams - emission and transportation***

Generation of intense ion and electron beams for different purposes is highly difficult technological issue. The electron beams are usually used as drivers of radiation sources ranging from microwaves to X-ray. The feasibility of the power level produced in that devices where the electron beam converts the DC power into electromagnetic wave is mainly dependent on the beam quality. If an extremely high frequency is considered in combination with high power levels makes the requirements even harder. The development of sources producing an intense ion beams is another issue to be considered during the research. The proposed Ph.D. thesis has to tackle both issues searching new scientific and technological ideas for generation and transport of low energy and high current electron and ion beams.