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## **The optimisation and simulation of vacuum plume field in ground testing for electric thrusters**

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The plume field in a vacuum facility for hall thruster ground testing is investigated in detail through a series of simulations using a direct simulation Monte Carlo (DSMC) code. The focus here is on the effects of finite background gas pressure in ground vacuum test facilities under different distribution of technical equipments such as the xenon pump, beam target or shroud. The results show that various structures and location of experimental equipments in vacuum facility are influential to plume field, even the operation and performance of hall thruster. There are also some considerations for distribution of experimental equipments to reach a better and real testing environment. The numerical simulation is great beneficial to the optimization design of test facility and plume effect analysis in ground testing for electric propulsion.

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