Simulations of electric fields in the cometary environment

We use the simulation code A.I.K.E.F. to investigate the spatial distribution and origin of the electric field in the cometary environment of 67P for different levels of activity and its influence on the cometary ion motion. In particular we focus on the inner coma, where the convective electric field becomes negligible compared to the ambipolar and Hall-Field. In this region newly born cometary ions experience a field significantly different from the convective field in strength and direction. Contrary to the cometary ions in the outer coma that are picked-up due to the solar wind electric field these ions are accelerated radially outwards from the nucleus and into the tail. Since electric field observations are sparse a detailed analysis of the simulated fields and ion motion and comparison with available data may give insight into the electric field configuration at 67P.