

A Space Accelerator Station for Planet Substance Analysis, B. BOGDANOVITCH, N. LEN,

A. NESTEROVITCH, MEPHI - The structure analysis of planet surface can be performed by means of space stations generating hydrogen beams. To obtain high density of hydrogen beam, the method of space grouping of accelerated ions is proposed. The accelerator produces ions with increasing during a pulse energy. All bunches of the accelerated beam form single bunch at the drift space between accelerator and target. Thus, significant density of ions (or atoms of hydrogen) can be generated on the planet surface. The paper discusses the requirements to parameters of accelerator: dependence of bunch energy versus pulse time, particles energy spectrum, influence of instabilities of power supply. The dependencies of particle density on planet surface versus a bunch energy spectrum, pulse current, distance from accelerator to a planet surface are given. Calculation of energy spectrum width and particle density of resultant bunch are made for distance range up to 2000 km, energy of beam up to 40 MeV, pulse current of negative ions of hydrogen up to 2.6 A and accelerator pulse duration up to 2 ms. It is shown that factor compression of particle density can be made equal to 100 with angular beam spread equal to 0.0001 radian.