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真空弧离子源引出束流在加速空间的分布

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摘要 采用数码相机直接照相的方法来确定真空弧离子源引出束流在加速空间的分布。实验在动态真空实验系统中进行,系统真空度优于 2×10^{-3} Pa。在离子源脉冲工作的条件下,采用数码相机拍摄到离子源引出束流在加速空间的积分图像,得到引出束流的幅亮度在拍摄平面上的相对分布,然后再通过Abel转换得到引出束流在加速空间的径向分布。实验结果表明:真空弧离子源引出束流近似高斯分布,离子源出口处的束流比靶入口处的束流强40%。

关键词 [真空弧离子源](#) [引出束流](#) [Abel转换](#)

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Spatial Beam Distribution of Vacuum Arc Ion Source in Accelerating Area

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Abstract Spatial beam distribution of vacuum arc ion source in accelerating area was (determined) using a digital camera. Vacuum arc ion source was placed in a dynamic vacuum system, where the vacuity was better than 2×10^{-3} Pa. The integral image of vacuum arc ion source extraction beam in accelerating area was captured using a digital camera during ion source worked in pulse mode, and the relative luminance of extraction beam was educed subsequently through image processing, eventually, radial beam distribution of vacuum arc ion source in accelerating area was determined after Abel transform. The results show that spatial beam of vacuum arc ion source in accelerating area is approximately Gauss distribution, and the beam intensity close to ion source is 40 percent (bigger) than that near target.

Key words [vacuum arc ion source](#) [extraction beam](#) [Abel transform](#)

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