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(54) **Title:** TECHNIQUES FOR COMMENSURATE CUSP-FIELD FOR EFFECTIVE ION BEAM NEUTRALIZATION

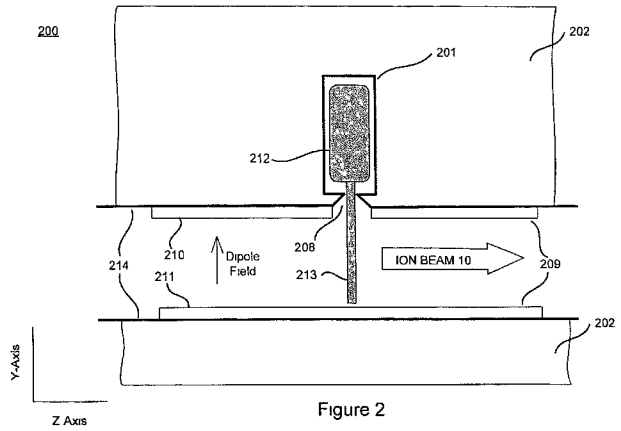

Figure 2

(57) **Abstract:** Techniques for commensurate cusp-field for effective ion beam neutralization are disclosed. In one particular exemplary embodiment, the techniques may be realized as a charged particle injection system comprising a beamguide configured to transport an ion beam through a dipole field. The charged particle injection system may also comprise a first array of magnets and a second array of magnets configured to generate a multi-cusp magnetic field, positioned along at least a portion of an ion beam path, the first array of magnets being on a first side of the ion beam path and the second array of magnets being on a second side of the ion beam path. The charged particle injection system may further comprise a charged particle source having one or more apertures configured to inject charged particles into the ion beam path. The charged particle injection system may furthermore align the one or more apertures with at least one of the first array of magnets and the second array of magnets to align the injected charged particles from the charged particle source with one or more magnetic regions for an effective charged particle diffusion into the ion beam path.

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INTERNATIONAL SEARCH REPORT

International application No
PCT7US2008/079449

A. CLASSIFICATION OF SUBJECT MATTER

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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC HOlL, HOlJ, C23C, H05H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility models and applications for Utility models since 1975

Japanese Utility models and applications for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKIPASS(KIPO Internal) & Keyword ion, beam, charge, and magnet

C. DOCUMENTS CONSIDERED TO **BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
A	US 6797968 B2 (MITSUKUNI TSUKIHARA et al) 28 September 2004 See the Abstract, Column 1, Line 11 - Column 29, Line 56, Claims 1-72, Figures 1-31	1-21
A	JP 06-349593 A (SUMITOMO HEAVY END , LTD) 22 December 1994 See the Abstract, Paragraph [0001] - Paragraph [0028], Claims 1-5, Figures 1-13	1-21
A	JP 2004-274060 A (SAMSUNG ELECTRONICS CO , LTD) 30 September 2004 See the Abstract, Paragraph [0001] - Paragraph [0035], Claims 1-20, Figures 1-5B	1-21

☐ Further documents are listed in the continuation of Box C

☒ See patent family annex

* Special categories of cited documents

"A" document defining the general state of the art which is not considered to be of particular relevance

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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