

Vacuum: A Void in Space

A very basic introduction to vacuum for someone with no vacuum experience and who might want to test some equipment on an accelerator.

Session lead by Michele Siggel-King
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at the annual meeting of the Quasar and THz Groups
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Vacuum:

This session “sucks”

J. Harasimowicz

How it is!

For most purposes vacuum is just a tool

- Most users would prefer not to have to bother with it
- The accelerator physicists who determine the properties of the next generation of machines would like the vacuum engineer to design a vacuum system where -
 - The pressure is zero
 - The vacuum pumps and gauges take up no space
 - The cost is trivial

Much ado about nothing!

Nature abhors a vacuum

We have to work quite hard to get low pressures

Understand limitations

Outgassing

“Pumping”

All need Vacuum to a greater or lesser extent

e.g.

$10^{-5} - 10^{-6}$ mbar in small linacs, Van de Graafs

$10^{-7} - 10^{-8}$ mbar in proton synchrotrons

$10^{-9} - 10^{-10}$ mbar in synchrotron light sources

$10^{-11} - 10^{-12}$ mbar in antiproton accumulation rings

Power Point Slides from a course given by

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entitled

“Vacuum Science and Technology in Accelerators”

were used and made available to the participants.

Permission to use this material was kindly given.

The slides (and recorded lectures) are available at:

<http://www.cockcroft.ac.uk/education/academic0910.html>

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Other materials used include:

