

## PHYSICS AND TECHNOLOGY OF VACUUM IN FUSION EXPERIMENTS

By

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### Abstract

The generation of proper vacuum conditions in a fusion reactor with magnetic confinement represents a challenging task for vacuum technology. Starting from rather elementary physical considerations a certain frame of specifications for the vacuum outline of a reactor as envisaged today will be derived. But uncertainties originating from still incomplete knowledge of important details in plasma behaviour — e. g. plasma confinement of Helium — render it impossible to gain all necessary data. The vacuum technology of a plasma experiment — typical for present day machines — will be discussed briefly and compared with a somewhat deliberately selected reactor design to show the enormous increase in complexity, caused, last but not least, by the handling of tritium in the vacuum system, and by the neutron activation of structural vacuum components.

### LITERATURE RELEVANT TO THIS SUBJECT

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INTOR, *Draft Final Report*, IAEA, Vienna, EUR FU BRU IXII (501/79) EDV 80  
L. A. ARTSIMOVICH, *Controlled Thermonuclear Reactions*, Gordon and Breach Science Publishers, New York, 1964.  
A number of papers are also found in:  
*Proceedings 6th Intern. Vac. Congr. Jap. Journ. Appl. Phys. Supplement 2, Part 1* 217–239, 1974.  
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A paper with similar scope as presented at the Conference is intended for publication in *J. Vac. Sci. Technol.*