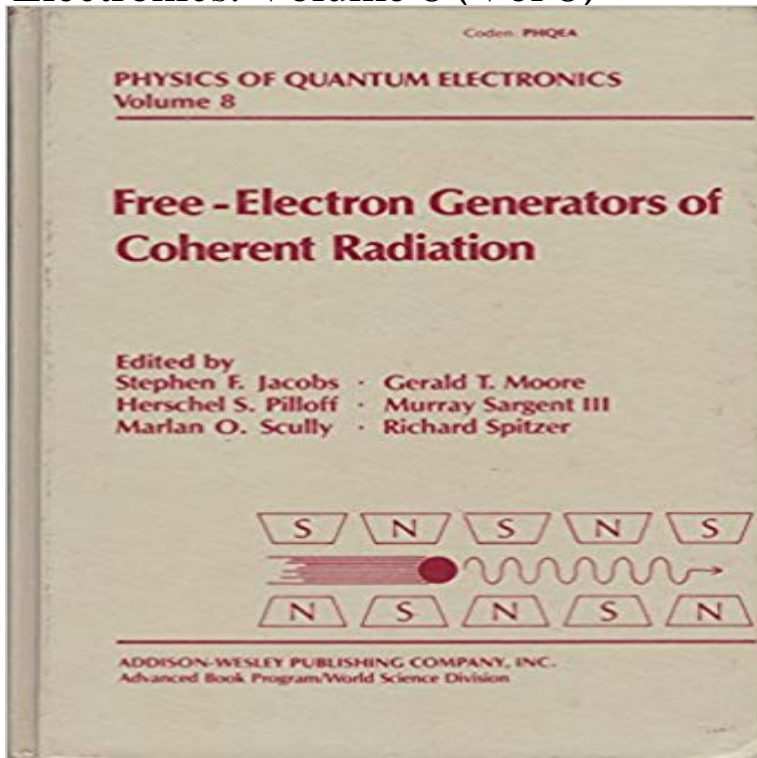


# Free-Electron Generators of Coherent Radiation. Physics of Quantum Electronics. Volume 8 (Vol 8)



This book is based on lectures given at the third Workshop on Free-Electron Laser Devices sponsored by the Office of Naval Research. The first two workshops were held at Telluride, Colorado, in 1977 and 1979. The proceedings of these workshops were published as Volumes 5 and 7 of the Physics of Quantum Electronics series. Volume 5 is entitled Novel Sources of Coherent Radiation. Volume 7, as well as the two volumes (8 and 9) of the present book, is entitled Free-Electron Generators of Coherent Radiation. The present book comprises the material presented at the 1981 ONR- sponsored workshop held in Sun Valley, Idaho, and contains 47 articles by researchers from eight nations. The fact that we have had to split this material into two volumes attests to the continued growth in this interesting field of quantum optics and electronics. There is a reason for the roughly two year doubling time in the size of these published workshop proceedings. (Volumes 5 and 7 contained 398 and 806 pages respectively.) In the first workshop we were dealing primarily with issues of principle, ranging from the history of these devices through the linear and nonlinear theory of their operation. A variety of potential candidates for the extraction of coherent radiation from electron beams, ranging from wiggler-based devices to stimulated Cerenkov radiators, were considered. It is probably fair to say that the device nonlinearities and the description of the spread in momentum space were of paramount interest at that time. It is certainly true that the prospect of a reasonably efficient machine was not immediately apparent. By the time of the second Telluride workshop, several subtle aspects of free- electron devices were becoming better understood. For example, issues associated with coherent pulse propagation and variable-parameter free-electron lasers were considered.



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