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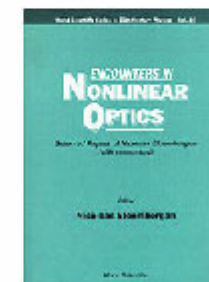
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ENCOUNTERS IN NONLINEAR OPTICS

Selected Papers of Nicolaas Bloembergen (With Commentary)

edited by **Nicolaas Bloembergen** (*Harvard University*)

This selection of papers in the field of nonlinear optics contains reprints of original research, and general reviews written since 1960 up to the present. Brief comments by the author place each paper in a historical context of the evolution of nonlinear optics. Papers are selected from a more comprehensive bibliography either on the basis of their influence on subsequent developments or because they were originally published in journals or conference proceedings which are less easily accessible.

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ENCOUNTERS IN NONLINEAR OPTICS

CONTENTS

FRONT MATTER	i
Section 1. Fundamentals	
Section 1. Fundamentals <i>Nicholas Bloembergen</i>	1
Paper 1.1: J.A. Armstrong, N.Bloembergen, J. Ducuing and P.S. Pershan, "Interactions between light waves in a nonlinear dielectric," <i>Phys. Rev.</i> 127, 1918-1939, 1962.	3
Paper 1.2: N.Bloembergen and P.S. Pershan, "Light waves at the boundary of nonlinear media," <i>Phys. Rev.</i> 128, 606-622, 196	29
Paper 1.3: Bloembergen and Y.R. Shen, "Quantum theoretical comparison of nonlinear susceptibilities in parametric media, lasers and raman lasers," <i>Phys. Rev.</i> 133, A37-A49, 1964.	47
Paper 1.4: N. Bloembergen, "Wave propagation in nonlinear electromagnetic media," <i>Proceedings IEEE</i> 51, 124-131, 1963. Reprinted with permission of the Institute of Electrical and Electronic Engineers.	62



Title: Paper 1.2: N.Bloembergen and P.S. Pershan, "Light waves at the boundary of nonlinear media," Phys. Rev. 128, 606-622, 196

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Abstract: Our work on the preceding paper induced me to frequently consult M. Born and E. Wolf's standard textbook, Principles of Optics. It dawned on me that many sections of this book could be extended and generalized to include the regime of high light intensities where nonlinear responses would become observable. An obvious question which presented itself was concerned with the boundary conditions when an intense laser beam is incident from the vacuum onto a nonlinear crystal. This question led in a straightforward manner to generalizations of the laws of reflection and refraction of light. I became interested in the history of these laws for linear optics and was pleased that the referee and the editors allowed a reference to a paper by Hero of Alexandria on the reflection of light published in the first century AD. We calculated the intensities of the second harmonic wave in reflection and of two refracted second harmonic waves, the so-called free and forced waves. We analyzed the polarization dependence, the occurrence of Brewster's angle in harmonic generation, and the phenomenon of total reflection as well as the conditions for nonlinear response in a plane parallel slab and a prism. Although only straightforward applications of the boundary conditions of the electromagnetic fields were involved, the algebra was often lengthy and rather tedious. Peter Pershan carried out the bulk of these calculations. This paper received much less attention than the preceding one. Its relevance to the investigation of surfaces and surface layers was recognized decades later when second harmonic and sum frequency generation became widely used tools in surface physics and chemistry.

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TOC: [Back to Table of Contents](#)

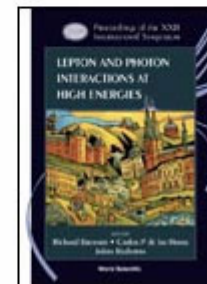


LEPTON AND PHOTON INTERACTIONS AT HIGH ENERGIES

Proceedings of the XXII International Symposium

Uppsala University, Sweden, 30 June - 5 July 2005

edited by **Richard Brenner, Carlos P de los Heros & Johan Rathsman** (*Uppsala University, Sweden*)



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CONTENTS

FRONT MATTER	v
ELECTROWEAK PHYSICS AND BEYOND	
TOP QUARK MEASUREMENTS <i>AURELIO JUSTE</i>	3
ELECTROWEAK MEASUREMENTS <i>CRISTINEL DIACONU</i>	16
SEARCH FOR HIGGS AND NEW PHENOMENA AT COLLIDERS <i>STEPHAN LAMMEL</i>	29
ELECTROWEAK SYMMETRY BREAKING CIRCA 2005 <i>SALLY DAWSON</i>	41

Title: TOP QUARK MEASUREMENTS**DOI No:** [10.1142/9789812704023_0001](#)**Source:** [LEPTON AND PHOTON INTERACTIONS AT HIGH ENERGIES](#) (pp 3-15)**Copyright:** World Scientific Publishing Co. Pte. Ltd.**Author(s):** [AURELIO JUSTE](#)

Fermi National Accelerator Laboratory, P.O. Box 500, MS 357, Batavia, IL 60510, USA

Abstract: Ten years after its discovery at the Tevatron collider, we still know little about the top quark. Its large mass suggests it may play a key role in the mechanism of Electroweak Symmetry Breaking (EWSB), or open a window of sensitivity to new physics related to EWSB and preferentially coupled to it. To determine whether this is the case, precision measurements of top quark properties are necessary. The high statistics samples being collected by the Tevatron experiments during Run II start to incisively probe the top quark sector. This report summarizes the experimental status of the top quark, focusing in particular on the recent measurements from the Tevatron Run II.

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