

17/10/18

## Unit - 5

# Fibre Optics & Laser

\* **Laser** :- The word laser stands for "Light Amplification by Stimulated Emission of Radiation", used to produce a strong, monochromatic and highly coherent beam of light.

**Characteristics of Laser** :-

- 1) **Monochromaticity** :- The laser produces light of a single wavelength, i.e. the line width associated with laser beam is extremely narrow.
- 2) **Directionality** :- Laser beam is highly directional.
- 3) **Coherence** :- Laser is coherent spatially and temporally coherent to an extraordinary degree.
- 4) **Brightness** :- Laser beam is highly intense as compared to ordinary source of light. That is why it can be used for such operations as welding which involves reaching high temperatures.

\* **Basic Concepts of Laser** :-

- Absorption of Radiation
- Spontaneous Emission
- Stimulated Emission
- Population Inversion
- Pumping

# Engineering Physics Laser Notes

**National Research Council of Canada**



## **Engineering Physics Laser Notes:**

*Lasers and Optical Engineering* Pankaj K. Das, 2012-12-06 A textbook on lasers and optical engineering should include all aspects of lasers and optics however this is a large undertaking The objective of this book is to give an introduction to the subject on a level such that under graduate students mostly juniors seniors from disciplines like electrical engineering physics and optical engineering can use the book To achieve this goal a lot of basic background material central to the subject has been covered in optics and laser physics Students with an elementary knowledge of freshman physics and with no formal courses in electromagnetic theory should be able to follow the book although for some sections knowledge of electromagnetic theory the Fourier transform and linear systems would be highly beneficial There are excellent books on optics laser physics and optical engineering Actually most of my knowledge was acquired through these However when I started teaching an undergraduate course in 1974 under the same heading as the title of this book I had to use four books to cover the material I thought an electrical engineer needed for his introduction to the world of lasers and optical engineering In my sabbatical year 1980 1981 I started writing class notes for my students so that they could get through the course by possibly buying only one book Eventually these notes grew with the help of my undergraduate and graduate students and the final result is this book

*Lasers* Charles Blain, 2002 Developments in lasers continue to enable progress in many areas such as eye surgery the recording industry and dozens of others This book presents citations from the book literature for the last 25 years and groups them for ease of access which is also provided by subject author and titles indexes

*Laser Physics* Peter W. Milonni, Joseph H. Eberly, 2010-03-29 Although the basic principles of lasers have remained unchanged in the past 20 years there has been a shift in the kinds of lasers generating interest Providing a comprehensive introduction to the operating principles and applications of lasers this second edition of the classic book on the subject reveals the latest developments and applications of lasers Placing more emphasis on applications of lasers and on optical physics the book s self contained discussions will appeal to physicists chemists optical scientists engineers and advanced undergraduate students

The Laser in America, 1950-1970 Joan Lisa Bromberg, 1991 In this book Joan Lisa Bromberg brings a historian s broad perspective to bear on the formative years of laser research in the United States

**European Scientific Notes**, 1985

European Science Notes, 1985

*Fusion Energy Update*, 1985

**Selected Papers on Ultrafast Laser Technology** Timothy R. Gosnell, Antoinette J. Taylor, 1991

*International Journal of Materials & Product Technology*, 1990

*New Scientist*, 1969

**Laser Literature** Edward V. Ashburn, 1967

**Reverse Acronyms, Initialisms, & Abbreviations Dictionary**, 1991

**Liquid Crystal Materials, Devices, and Applications**, 2006

**International Research Centers Directory** Anthony L. Gerring, 1995

**Laser Focus**, 1976

Research Centers Directory, 1989

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