

**JPG To PDF** - Unregistered

If you want to remove this text, Please register

**JPG To PDF** - Unregistered

If you want to remove this text, Please register

**JPG To PDF** - Unregistered

If you want to remove this text, Please register

**JPG To PDF** - Unregistered

If you want to remove this text, Please register

## Pulse Shaping to Chaos in Ammonia using Pulse Input

C. A. Emshary and M. A. Ibraheem

*Phyrice Dept, College of Education, University of Basrah*

### Abstract

We have studied theoretically the dynamic behavior of a fabry-perot interferometer filled with ammonia gas (as a nonlinear medium) pumped with SLM-TEA CO<sub>2</sub> laser pulses with different lines. The transient to near quasi steady state modes are considered. Pulse distortion as well as chaotic output are achieved for three lines namely 9p20, 9p34 and 9p40.

### Introduction

The transmitted light by a fabry-perot cavity containing a two level absorber exhibits a bistable behavior (1) passive all optical system are interesting, as basically simple arrangement capable of exhibiting oscillation and turbulence, but also because they can be fully quantised. The observation of chaos in optically bistable system is interesting because of the fundamental nature of the process. It is also especially interesting relative to the general field of turbulence because the optical devices are very simple by comparison to other cases in which chaos exists (2). As such, chaos is differentiated from noise insofar as it is result of deterministic rather than stochastic dynamics. Chaos was originally regarded as just very complicated behavior, in which case the division between chaotic and non chaotic behavior is arbitrary. Much of the current interest in chaos is concerned with the set of nonequilibrium phase transition (bifurcations) which lie between the stable and chaotic behavior. In this work we present a detailed theoretical study for the possibility of chaos in ammonia gas (as a nonlinear medium) inside a fabry-perot cavity pumped by smooth TEA CO<sub>2</sub> laser pulses of variable duration with a number of lines namely 9p20, 9p34,