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**طراحی و ساخت دستگاه تداخل سنج فابری – پروی روبشی**

## **Design and Construction of a Scanning Fabry-Perot Interferometer**

**H. R. Fallah\*, A. Kiasatpour\* and B. Faghih Imani\*\***

**\*Department of Physics, University of Isfahan**

**\*\*M. S. Student of Physics, University of Isfahan**

### **Abstract**

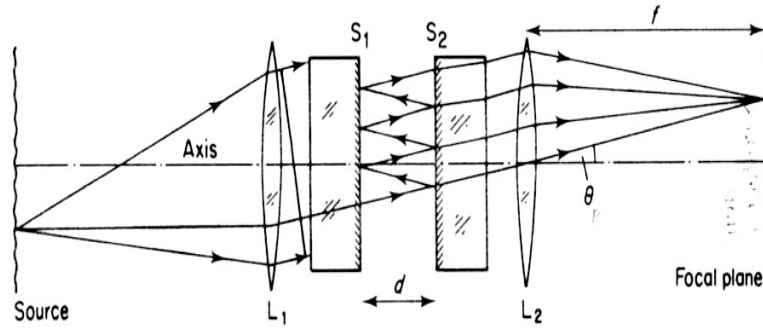
Fabry-Perot interferometer has classically been used for defining fine structures of spectral lines. Today it is also used in modern technology such as ultra stable lasers because of its very high resolving power.

In this paper Fabry-perot interferometer is briefly discussed and a scanning fabry-perot interferometer is designed and constructed. Also, its construction and operation is explained. Fringes of He-Ne laser, Sodium and Hg sources are formed and studied by this scanning fabry-perot interferometer. Using this instrument, we have conducted some tests and have tried to measure the separation between two sodium lines.

**Keywords:** Interferometry, Fabry-perot interferometer, Scanning interferometer, Spec

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$$\rho = \left( \frac{1 - R}{1 + R} \right)^2$$

$$R = \frac{1}{2} \left( \frac{d}{f} \right)^2 \sin^2 \theta$$

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$$\frac{T}{(1 - R)^2 \{ 1 + [fR/(1 - R)] \sin^2 \pi \delta / \lambda \}}$$

$\delta$

R T

:

$$\frac{fR}{(1 - R)^2}$$

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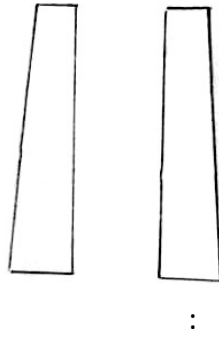
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$\lambda/$

$\lambda/$

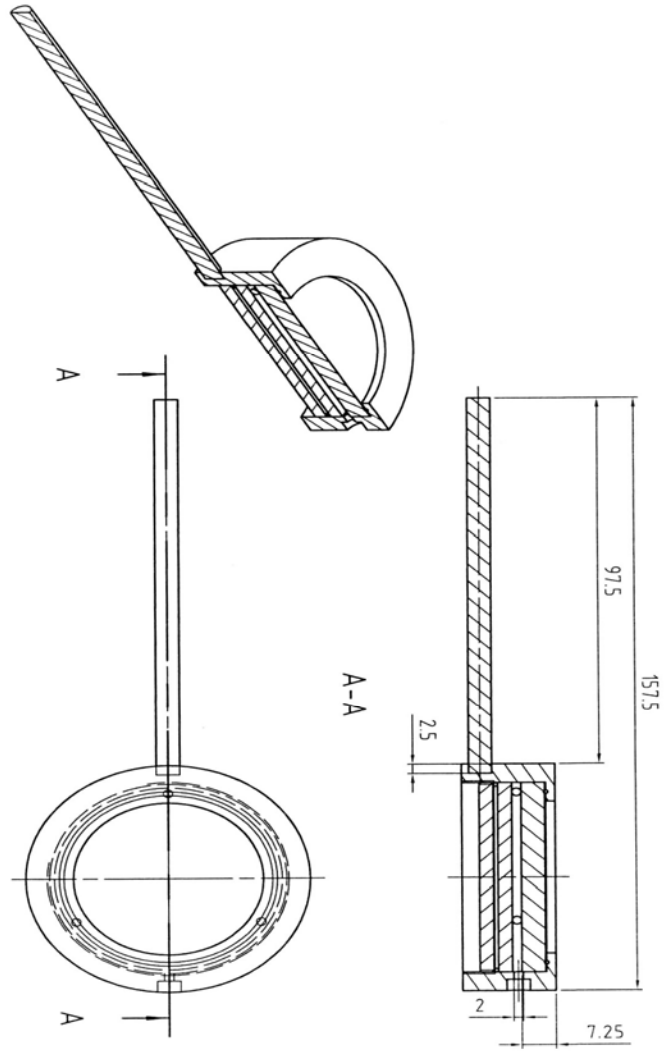
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**A**

**B**

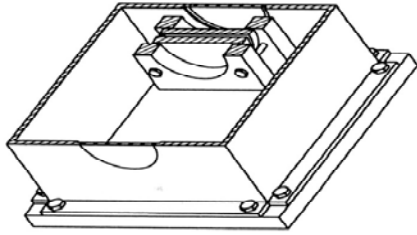
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(A )

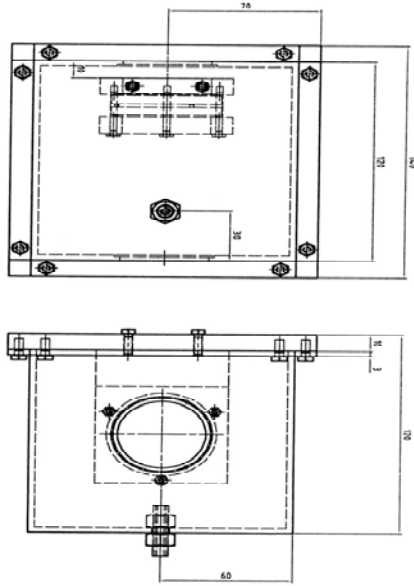
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(B )

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A

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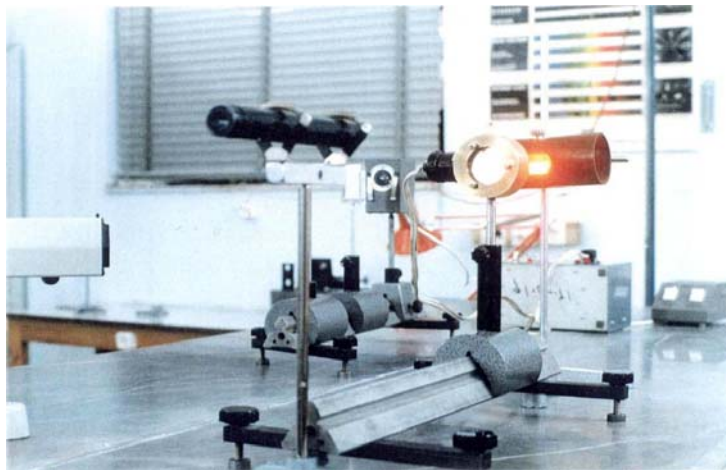
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**B**

**B**

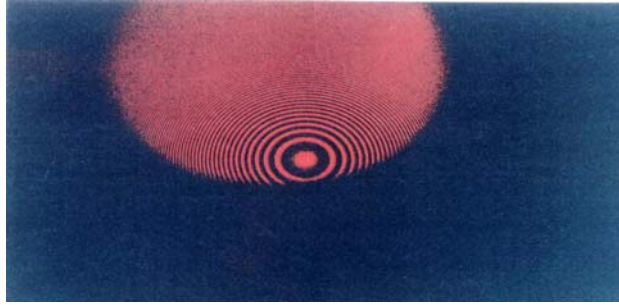
**B**

**A**





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$d$  ) F.P.  $f$

$\theta$   $m$  (  $n$

$\lambda$

$nd \cos \theta = m \lambda$

$D$   $\theta$

$\theta = D / f$

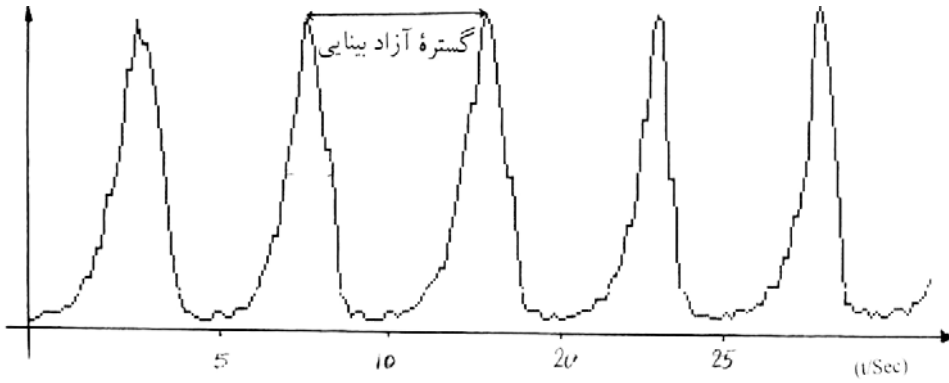
$\theta$   $\cos \theta$

$$d(D^\vee) / dm = \vee \lambda f^\vee / nd$$

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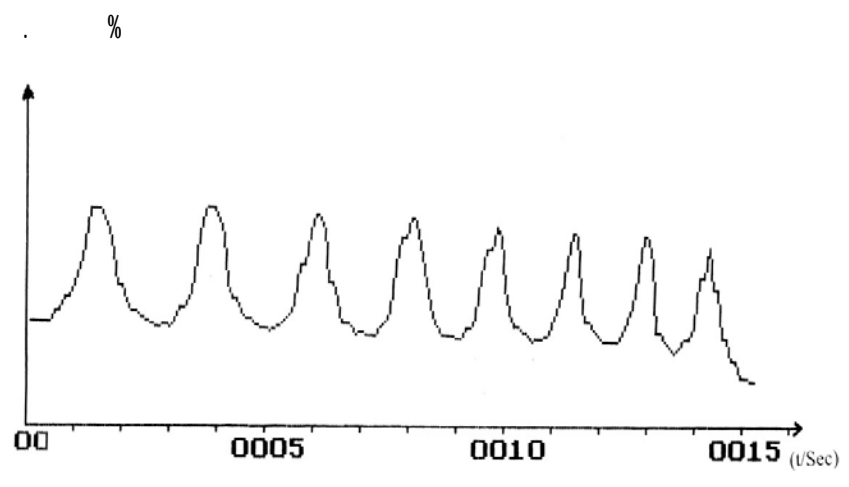
$$) d (n = , ) n \quad m \quad D \quad \lambda \quad f ($$

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