电子科技大学
格拉斯哥学院
Glasgow College, UESTC

Score

Physical Experiment Ⅱ

Prelab Report 08

Experiment Title: Measuring Laser Wavelength and Index of Refraction of Air by Michelson Interferometer

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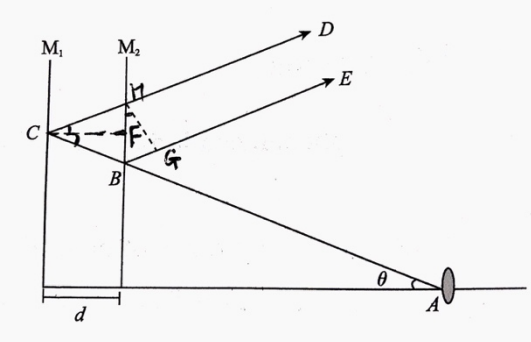
Score

Answers to Questions (20 points)

(1) Firstly, add a perpendicular line of AB that goes through point C and intersects AB at point F. Secondly, let the intersection point of the dotted line and BE be point G, and the intersection point of the dotted line and CD be point H.



BF=dtanθ;

BH=2dtanθ;

BC=$\frac{d}{cos\theta}$;

BG=BH*sinθ=2dtanθ*sinθ;

Δpath=CH+BC-BG=2*BC-BG=$\frac{2d}{cos\theta}$ - 2dtanθ*sinθ=2dcosθ

(2)

a. The reflected beam passes through the beam splitter for 3 times.

b. The purpose of the compensator plate G_2 is to make the calculation of the difference be easier, since we can use the distance between the M_1 and M_2' to calculate the path difference directly.

c. The thickness of G_2 is supposed to be equal to the thickness of G_1