ABSTRAK

PENGUKURAN KOEFISIEN REDAMAN PADA SISTEM OSILASI PEGAS-MAGNET DAN KUMPARAN MENGGUNAKAN VIDEO

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2015

Telah dilakukan penelitian mengenai redaman pada sistem osilasi pegas-magnet dan kumparan. Proses sistem osilasi direkam menggunakan kamera digital. Hasil rekaman dianalisa dengan menggunakan *software* LoggerPro. Titik-titik data pada grafik perubahan posisi terhadap waktu kemudian difit dengan persamaan $x(t) = Ae^{-(b/2m)t}\cos(\omega t + \theta)$ untuk mendapatkan koefisien redaman. Koefisien redaman untuk kumparan sebesar 0, 100, 200, 300, 400, dan 500 lilitan yaitu 0,0241 kg/s; 0,0280 kg/s; 0,0305 kg/s; 0,0280 kg/s; 0,0274 kg/s; dan 0,0267 kg/s. Penelitian menunjukkan bahwa gaya magnetik mempengaruhi redaman pada sistem osilasi pegas-magnet dan kumparan.

Kata kunci : osilasi, gaya magnetik, redaman, kumparan

ABSTRACT

THE MEASUREMENT OF DAMPING COEFFICIENT OF AN OSCILLATING SPRING-MAGNET SYSTEM WITH COILS USING A VIDEO

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A research about damped oscillation on spring-magnet system with turns of coils has already done. The process of oscillation system was on recording use camera digital. The result of recording was analyzing use a LoggerPro software. The points of data in graph of change position with time was be fitting by equation $x(t) = Ae^{-(b/2m)t}\cos(\omega t + \theta)$ to get damping coefficient. The damping coefficient for 0, 100, 200, 300, 400, and 500 turns of coils are 0,0241 kg/s; 0,0280 kg/s; 0,0305 kg/s; 0,0280 kg/s; 0,0274 kg/s; and 0,0267 kg/s. The research has showed that magnetic force had influence with damping of damped oscillation spring-magnet and coils system.

Keywords : oscillation, magnetic force, damping, coils