ABSTRAK

PENGUKURAN FREKUENSI RESONANSI PADA GAMELAN *SLENTHEM* DENGAN ANALISIS BUNYI MENGGUNAKAN SENSOR BUNYI BERBANTUAN *SOFTWARE LOGGER PRO*

Nikita
Universitas Sanata Dharma
Yogyakarta
2024

Pengukuran frekuensi resonansi pada gamelan *slenthem* telah dilakukan dengan analisis bunyi menggunakan sensor bunyi berbantuan *Software Logger Pro.* Sumber bunyi yang terdapat pada gamelan *Slenthem* dibunyikan dan direkam suaranya dengan menggunakan sensor bunyi. Hasil rekaman bunyi ditampilkan dalam bentuk grafik hubungan tekanan suara terhadap waktu. Nilai frekuensi resonansi diperoleh dengan cara menganalisis grafik menggunakan *fitting data* mengikuti persamaan sinusoidal. Nilai frekuensi resonansi diukur pada sumber bunyi berupa bilah-bilah logam dengan panjang yang berbeda-beda. Adanya perbedaan sumber bunyi tersebut mempengaruhi ukuran resonator yang digunakan. Adapun resonator tersebut berupa tabung kolom udara dengan panjang tabung dan diameter mulut tabung yang berbeda-beda. Hasil pengukuran menunjukkan bahwa semakin panjang bilah logamnya, maka frekuensi resonansi yang dihasilkan akan semakin kecil. Sehingga panjang kolom udara yang digunakan akan semakin tinggi, dan diameter mulut tabungnya akan semakin kecil.

Kata kunci: Frekuensi resonansi, Pipa organa tertutup, Resonator Helmholtz, dan Gamelan *Slenthem*

ABSTRACT

MEASUREMENT OF RESONANCE FREQUENCY IN THE SLENTHEM GAMELAN WITH SOUND ANALYSIS USING A SOUND SENSOR ASSISTED WITH LOGGER PRO SOFTWARE

Nikita
Sanata Dharma *University*
Yogyakarta
2024

The measurement of resonance frequency in the gamelan slenthem has been conducted through sound analysis using a sound sensor and Logger Pro Software. The sound sources in the gamelan slenthem were played, and their sounds were recorded using a sound sensor. The recorded sound results are displayed as a graph showing the relationship between sound pressure and time. The resonance frequency values were obtained by analyzing the graph using data fitting following a sinusoidal equation. Resonance frequency values were measured on sound sources in the form of metal bars of varying lengths. The differences in these sound sources affected the size of the resonator used. The resonators are air column tubes with varying tube lengths and mouth diameters. The measurement results indicate that the longer the metal bar, the lower the resulting resonance frequency. So the length of the tube used will be higher, and the diameter of the tube mouth will be smaller.

Keywords: *Resonance Frequency, Closed Organ Pipes, Helmholtz Resonators, and Gamelan Slenthem*