

1. ま え が き

2. 制 御 理 論

3. 実験およびその結果

3-1. 実験方法

3-2. 實驗結果

(c) 制御力のメンバーシップ関数

図-1 メンバ-シップ関数

表-1 規則表

a \ v	NB	ZO	PB
NB	PB	PS	ZO
ZO	PS	ZO	NS
PB	ZO	NS	NB

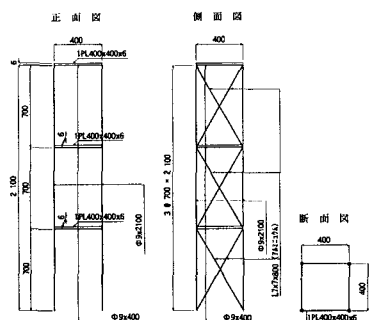


図-2 実験供試体一般図

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graph TD
    F["外力 F(t)"] --> Z["制振力"]
    Z --> O["応答 (加速度)"]
    O --> M["構造物模型"]
    M --> C["コントローラ"]
    C --> Z
    
    subgraph Controller [コントローラ]
        PC["パソコン内で処理"] --> FI["ファジィ推論"]
        FI --> DF["非ファジィ化"]
        FI --> FV["a, v のファジィ化"]
        DF --> PP["プリンタポート"]
        FV --> SV["速度 v の計算"]
        SV --> AD["A/D 変換ボード"]
    end

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表-2 振動特性一覽表

	1st mode	2nd mode	3rd mode
ω (rad/s)	8.895	26.05	49.25
f (Hz)	1.416	4.150	6.250
T (sec)	0.706	0.241	0.160
ζ (%)	0.36	0.25	—

Figure 5 is a graph showing the free vibration waveform (自由振動波形) for four floors. The vertical axis represents acceleration in gal, and the horizontal axis represents time in seconds (sec). The graph displays four distinct vibration signals, labeled from top to bottom as 振動台入力 (第1層) (Shaking table input, 1st floor), 第2層 (2nd floor), 第3層 (3rd floor), and 第4層 (4th floor). A vertical line at 12.4 seconds indicates the shaking table stop (振動台停止 (12.4sec)). The 1st floor signal is a low-amplitude, low-frequency oscillation. The 2nd, 3rd, and 4th floor signals show increasing amplitude and frequency, with the 4th floor signal being the most intense and highest frequency.

4. あ と が き

Figure 6 is a graph showing the waveform of the 1st mode during braking. The vertical axis is labeled 'gal' (gals) and the horizontal axis is labeled 'sec' (seconds). The horizontal axis has major ticks at 0, 5, 10, 15, 20, and 25. A vertical line at 0.0 seconds is labeled '振動台停止、制御開始 (0.0sec)'. The waveform shows high-frequency oscillations (free vibration) before braking, which then transition to lower-frequency oscillations (controlled vibration) after braking begins. Labels include '自由振動 (第4層)' (Free vibration (4th floor)) and '制御時 (第4層)' (Control time (4th floor)).

なお、本研究の一部に平成5年度文部省科学研究費奨励研究（Ａ）、（研究代表者 小幡卓司、課題番号 05750450）の援助を受けたことを付記する。

1) 藤元一栄・岡村隆敏・石松栄治・河角省治：構造物のFuzzy振動制御に関する実験的研究，土木学会第47回年次学術講演会概要集 pp522～523, 1992. 2) 白石昌武：入門現代制御理論，啓学出版，1987. 3) 特集制御理論の考え方とモータ制御への応用，インターフェース1993年9月号，CQ出版社.