

# 帯域雑音エッジ聴音程の非線形特性

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## Non-Linear Characteristics of Band Noise Edge Listening

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### 梗概

高いQ値をもつデジタルフィルタで狭帯域雑音を系統発生させ、上界が可聴域上限を超えるようにした、このような刺激列と、対応する正弦波の刺激列を用い、上行と下行の双方で音程識別の認知テストを行ったところ、強いヒステリシスが観測され、帯域雑音での高域周波数認知は、正弦波と比較して弁別が著しく困難であることが判明した。音声言語の子音聴など、ヒト聴覚の高帯域での認知は大半が帯域雑音であり、旧来の正弦波を用いる聴覚検査では検出できなかった、ヒト高周波聴の非線形な特性の存在が明らかになった。

### Abstract

Band noise stimuli with steep spectral rise-up, whose high frequencies boundaries are beyond human audible range, are generated by use of high Q-value digital filters. By use of such series of band noises and sinusoidal stimuli pitch discern tests are performed.

Extremely strong hysteresis is observed in the listening of up-ward and down-ward frequency recognition. In the band noise test, pitch discern is considerably more difficult than in the series of sinusoidal stimuli. Most human high-frequency listening has much to do with consonants in spoken language. Our results show new non-linear characteristics of human high-frequency hearing that could tell difficulties in spoken language distinction which were unclear with those conventional hearing tests using sinusoidal stimuli sound.

Key words: band noise, high frequency, edge listening, Fermi frequency, nonlinear hysteresis

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