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Title paper: Model for theoretical analysis of a gyrotron driven of by an external harmonic signal

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Abstract: In this paper, gyrotron synchronization by an external harmonic signal is analyzed based on a simplified theoretical model. The main attention is paid to the case of gyrotron operating in the hard-excitation regime. Stability conditions of the synchronization regimes are analyzed when beam current and cyclotron resonance mismatch are varied. The possibility of reaching maximum interaction efficiency in the synchronization mode is discussed.