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# Frequency linearization of a wide band microwave VCO

## Abstract

Microwave Voltage Controlled Oscillators are a commonly used frequency sources for microwave reflectometry as they provide ultra-wide band frequencies with very fast tuning speeds of less than 10 microseconds with reasonable phase noise. A limiting factor for plasma reflectometry is the non-linear frequency characteristics of such a microwave VCO with its tuning voltage. Here we explore and implement use of non-linear tuning voltages so as to get a linear tuning and hence linear frequency sweep for the microwave reflectometer. Use of linear tuning voltages lead to a non-linear frequency sweep which lead to a variation of the output frequency of up to 400MHz even for a stationary target which would mask changes in plasma distance. Implementation of frequency linearization is expected to decrease this frequency variation significantly to less than 30MHz

Relevant references [Publications, web links etc.]:

## Academic Project Requirements:

1) **Required No. of student(s) for academic project: One (1)**

**Name of course with branch/discipline:** M.E. (Electronics and Communications) or M.E. (Electronics Engg.)

2) **Academic Project duration:**

- (a) **Total academic project duration: 10 Months**
- (b) **Student's presence at IPR for academic project work: Four (4) Full working Days per week**

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