Canadian Association of Physicists
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Contribution ID: **3835** Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

(G*) An OES diagnostic method for non-steady-state pulsed microwaves plasmas

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Microwave plasmas are hugely-studied plasmas, they have characteristics that make them unique, they can be generated for low and high-pressures, they have relatively high densities of charged particles, and can be generated in different cavity geometries. It has been proven that pulsing a microwave discharge can be beneficial for multiple application. Indeed, power interruption reduces gas heating and create one more tuning parameter for the plasma. To investigate microwaves plasmas parameters, most OES diagnostic methods rely on the use of a collisional radiative model. These kind of models assume apparent steady state of the plasma to determine key plasmas parameters from optical emission spectroscopy measurements. With pulsed plasma, the steady state hypothesis can not always be made.so collisional radiative models can't be used to study these plasmas. A method relying on line trapping of argon 4p-4s transitions was developed to determine 4s argon level densities without assuming steady state. To verify this method, both OAS measurements and the line ratios method were performed on a surface wave plasma with pressure ranging from 500 mTorr to the atmospheric pressure. This method was then used to study relatively two microwave pulsed plasmas: a time reversal plasma and a pulsed Tiago torch.

Keyword-1

microwave pulsed plasmas

Keyword-2

OES measurements

Keyword-3

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