

In this study coherence effects are considered. The theoretical model is presented together with the experimental evidence. It is observed that the coherence effects are responsible for the pulse-shortening phenomenon observed in most high power microwave (HPM) systems. If the interaction of electromagnetic (radiation) wave with electron beams and plasma in the resonant cavity are taken fully into account, it is believed that the coherence effects will not appear and the next generation of HPM devices could be possible.