

Integrated Microwave Photonics

José Capmany

Universidad Politecnica de Valencia, Spain

e-mail: jcapmany@iteam.upv.es

Integrated microwave photonics (IMWP) deals with the application of integrated photonics technologies to microwave photonics (MWP) systems. The lecture will cover this topic from a multi-facet point of view. After briefly introducing the basic concept behind MWP and IMWP and their application to emerging ICT system, it will briefly outline the salient characteristics of available material platforms that can be employed for the implementation of IMWP chips. I will cover basic features of mature material platforms such as InP, SOI and Si₃N₄. The second part of the lecture will be devoted to describe the two salient approaches that are available for the implementation of IMWP chips from a functional point of view. On one hand, we will review the recent progress in Application-Specific Photonic Integrated Circuits (ASPICs), where a particular circuit and chip configuration is designed to optimally perform a particular MWP functionality. On another hand, recent progress will be reported on a radically different approach, the universal MWP signal processor architecture that can be integrated on a chip and is capable of performing all the main functionalities by suitable software programming of its control signals.