

Photonic Integration Based Devices for Tunable and Next Generation Networks

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Cofinanciado por:



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Passive Optical Networks – the backbone of our communications



PON roadmap review





PICs opportunity

COMPLEXITY



Future-proof integrated solutions – the Revolution





PICadvanced approach: NG-PON2 Photonic Integration



C. Pinho, F. Rodrigues, A. M. Tavares, C. Rodrigues, C. E. Rodrigues e A. Teixeira, "Photonic Integrated Circuits for NGPON2 ONU Transceivers," MDPI Applied Sciences, vol. 10, nº 4024, 2020

PICadvanced approach: NG-PON2 Photonic Integration



Quasi-Coherent Rx features

- Continuous and Burst Mode Operation 10Gbps
- Intrinsic Tunability
- Intrinsic Sensitivity Gain
- Polarization independence (2 PD)
- Dedicated ASIC co-packaged with PIC







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The path of photonic integration: PON

>5 x less volumetric,
Single cooling¹,
Few step packaging,
Higher component
count, lower O-E-O
count, ...
1-cooled tx/rx devices

PIC present state of development **not competitive** +

Next gen PONs NGPON2, 25G, 50G, ...

GPON

XGSPON

More complex and **demanding** standards

Higher bandwidth due to potential full integration

Advanced hybrid packaging

- **Real passive alignment**
- O-band building blocks available in monolithic and quasimonolithic approaches
 - More FABs with the required processes available

Increase the port density through lower footprint (XFP->SFP+, ...)

Multi- technology (MPM like) in the same port (tri, quad, penta and hexaplexer may be available in the same PON port)

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