



## Polybinary modulation for bandwidth limited optical links

Vegas Olmos, Juan José; Jurado-Navas, Antonio

*Published in:*  
Journal of Physical Chemistry & Biophysics

*Link to article, DOI:*  
[10.4172/2161-0398.C1.013](https://doi.org/10.4172/2161-0398.C1.013)

*Publication date:*  
2015

*Document Version*  
Publisher's PDF, also known as Version of record

[Link back to DTU Orbit](#)

*Citation (APA):*  
Vegas Olmos, J. J., & Jurado-Navas, A. (2015). Polybinary modulation for bandwidth limited optical links. *Journal of Physical Chemistry & Biophysics*, 5(4). <https://doi.org/10.4172/2161-0398.C1.013>

---

### General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

## 3<sup>rd</sup> International Conference and Exhibition on **Lasers, Optics & Photonics**

September 01-03, 2015 Valencia, Spain

### **Polybinary modulation for bandwidth limited optical links**

J J Vegas Olmos<sup>1</sup> and Antonio Jurado-Navas<sup>1,2</sup>

<sup>1</sup>Technical University of Denmark, Denmark

<sup>2</sup>University of Malaga, Spain

Optical links using traditional modulation formats are reaching a plateau in terms of capacity, mainly due to bandwidth limitations in the devices employed at the transmitter and receivers. Advanced modulation formats, which boost the spectral efficiency, provide a smooth migration path towards effectively increase the available capacity. Advanced modulation formats however require digitalization of the signals and digital signal processing blocks to both generate and recover the data. There is therefore a trade-off in terms of efficiency gain vs. complexity. Poly binary modulation, a generalized form of partial response modulation, employs simple codification and filtering at the transmitter to drastically increase the spectral efficiency. At the receiver side, poly binary modulation requires low complexity direct detection and very little digital signal processing. This talk will review the recent results on poly binary modulation, comprising both binary and multilevel signals as seed signals. The results will show how poly binary modulation effectively reduces the bandwidth requirements on optical links while providing high spectral efficiency.

#### **Biography**

J J Vegas Olmos received the BSc and the MSc in Telecommunications and Electronic Engineering. He obtained the PhD degree from the Eindhoven University of Technology, The Netherlands. He also holds MA in East Asian Studies, a BEc in Business Administration, and an MBA. He was a Research Fellow at Osaka University, Japan and a Research Associate at the Central Research Laboratory, Hitachi Ltd. He is with the Technical University of Denmark, where he is an Associate Professor at the Department of Photonics Engineering.

[jjvo@fotonik.dtu.dk](mailto:jjvo@fotonik.dtu.dk)

#### **Notes:**