Computational methods for VCSEL array characterization and control

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Index Terms

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I. Presentation Summary

Coherent VCSEL arrays promise to provide improved performance in various applications, ranging from optical communications to remote sensing. Effective engineering and application of VCSEL arrays requires the ability to characterize VCSELs and the coupling behavior of arrays of VCSELs. Computational methods, both those using machine learning as well as those built on conventional algorithms, can assist in the characterization of VCSEL modes by identifying the number and profiles of the lasing modes. Computational and experimental methods of characterizing of the coherent coupling behavior of VCSEL arrays will be discussed.

II. Technical Abstract

Coherent VCSEL arrays promise to provide improved performance in various applications, ranging from optical communications to remote sensing. Effective engineering and application of VCSEL arrays requires the ability to characterize VCSELs and the coupling behavior of arrays of VCSELs. Computational methods, both those using machine learning as well as those built on conventional algorithms, can assist in the characterization of VCSEL modes by identifying the number and profiles of the lasing modes. Computational and experimental methods of characterizing of the coherent coupling behavior of VCSEL arrays will be discussed.