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**Michael Bishop\*** ([mbishop@math.ucdavis.edu](mailto:mbishop@math.ucdavis.edu)), Department of Mathematics, One Shields Ave, Davis, CA 95616. *Gap Dependency on Half Planes in the Product Vacua and Boundary State models.*

The Product Vacua and Boundary States models are a class of quantum spin models defined on the lattices  $\Lambda \subset \mathbb{Z}^d$ . In 2014, Bachmann, Hamza, Nachtergaele, and Young investigated the single species version in  $d$ -dimensions, studying the ground state space and spectral gap. The gap of these Hamiltonians showed an odd dependence on the subset  $\Lambda$ . This talk will discuss recent progress with Nachtergaele and Young on this dependence: for a given set of parameters, the Hamiltonians have an open spectral gap for almost every half plane in  $\mathbb{Z}^d$ , except for a specific half plane where the gap closes. (Received January 20, 2015)