

PROJECTION: A UNIFIED APPROACH TO SEMI-INFINITE LINEAR PROGRAMS WITH  
APPLICATIONS TO CONVEX OPTIMIZATION

**Amitabh Basu**

Johns Hopkins University, United States of America  
basu.amitabh@jhu.edu

We extend Fourier-Motzkin elimination to semi-infinite linear programs. Applying projection leads to new characterizations of important properties for primal-dual pairs of semi-infinite programs such as zero duality gap. Our approach yields a new classification of variables that is used to determine the existence of duality gaps. Our approach has interesting applications in finite-dimensional convex optimization, such as completely new proofs of Slater's condition for strong duality.

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