Physical basis for membrane-charge selectivity of cationic antimicrobial peptides BAE-YEUN HA, SATTAR TAHERI-ARAGHI, University of Waterloo — Antimicrobial peptides are known to selectively disrupt (highly-charged) microbial membranes by asymmetrical incorporation into the outer layers. We present a physical basis for membrane-charge selectivity of cationic antimicrobial peptides. In particular, we provide a clear picture of how peptide charge, Q, influences the asymmetrical insertion — one salient feature is the existence of an optimal peptide charge, at which selective insertion is optimized. Our results suggest that large Q is required for antimicrobial selectivity, consistent with experiments.