

# PHYSICS DEPARTMENT

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## COLLOQUIUM

“On the disk wind mass loss rates in QSOs”

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**Physical Science Building 1.119 (Edinburg)**

**LHSB 1.104 (Brownsville)**

**10:50am – 12:20pm**

**Abstract:** We derive here a relatively simple expression for the total wind mass loss rates in QSOs within the accretion disk wind scenario. We show that the simple expression derived here for QSO disk wind mass loss rate is in very good agreement with the more “exact” values obtained through significantly more complex and detailed numerically intensive 2.5D time-dependent simulations. Additionally we show that for typical QSO parameters, the disk itself will be emitting mostly in the UV/optical spectrum, in turn implying that the Xray emission from QSOs likely is produced through some physical mechanism acting at radii smaller than the inner disk radius (for a standard accretion disk, half of the initially gravitational potential energy of the accreting disk mass is emitted directly by the disk, while the other half “falls” closer towards the black hole than the inner disk radius). We also show that for typical QSO parameters, the disk itself is dominated by continuum radiation pressure (rather than thermal pressure), resulting in a “flat disk” (except for the innermost disk regions).