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# DISCUSSION

## A. Mirzamoghadam[1]

Investigation of the flow and heat transfer in a heated rotating cavity is of particular interest in our work, where we are generating thermal models to predict low-pressure turbine disk/rim metal temperatures in the interdisk cavity. The results reported in this paper suggest that natural convection induced by a heat flux directed radially is weakly sensitive to the rotational Reynolds number. However, previous studies (reference ASME Paper No. 93-GT-258) have reported a rather strong influence of rotational Re on Nu especially near the rim. Our three-dimensional CFD investigation leads us to believe that when the rim temperature is hotter than the mean disk temperature, the inflow motion of the core is enhanced by radial inflow natural convection, and there appears to be a distructive interference between the centrifugally driven upflow adjacent to the rotating disks and the strong inflow due to natural convection near the disk/rim corners. This observation will undoubtedly affect the Nusselt number variation along the hot rim, core, and the upper radii of the disks as the rotational Re is varied.

## Authors' Closure

The authors thank Dr. Mirzamoghadam for his contribution, which mentions an interesting and important feature of the flow and heat transfer in rotating cavities with mainly *axial* throughflow.

However, in the case of heat transfer in a rotating annulus without the presence of axial throughflow motion, which was the subject of our investigation, the influence of the rotational Reynolds number on the overall Nusselt number is rather weak, if the heat flux is directed *radially* from the outer to the inner radius.

In the case of an axially directed heat flux, the Nusselt number is strongly affected by the Reynolds number through the damping influence of the Coriolis forces. This is clearly shown in Fig. 11 in our paper.

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