Two-Brane Randall-Sundrum Model in $AdS_5$ and $dS_5$

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abstract Two flat Randall-Sundrum three-branes are analyzed, at fixed mutual distance, in the case where each brane contains an ideal isotropic fluid. Both fluids are in general assumed to follow the equation of state $p = (\gamma - 1)\rho$, where $\gamma$ is a constant. But if we impose the condition about zero energy flux from the branes into the bulk, it follows that constant values of the fluid energies at the branes are obtained only if the value of $\gamma$ is equal to zero (i.e., a ‘vacuum’ fluid). The fluids on the branes turn out to be related; thus if the Planck brane is a $dS_4$ brane (the effective four-dimensional constant being positive), then the existence of a finite gap between the branes implies that the energy density on the TeV brane is higher in magnitude than the energy density on the Planck brane. Also, we discuss the graviton localization problem in the two-brane setting, generalizing prior works.