Problem 4

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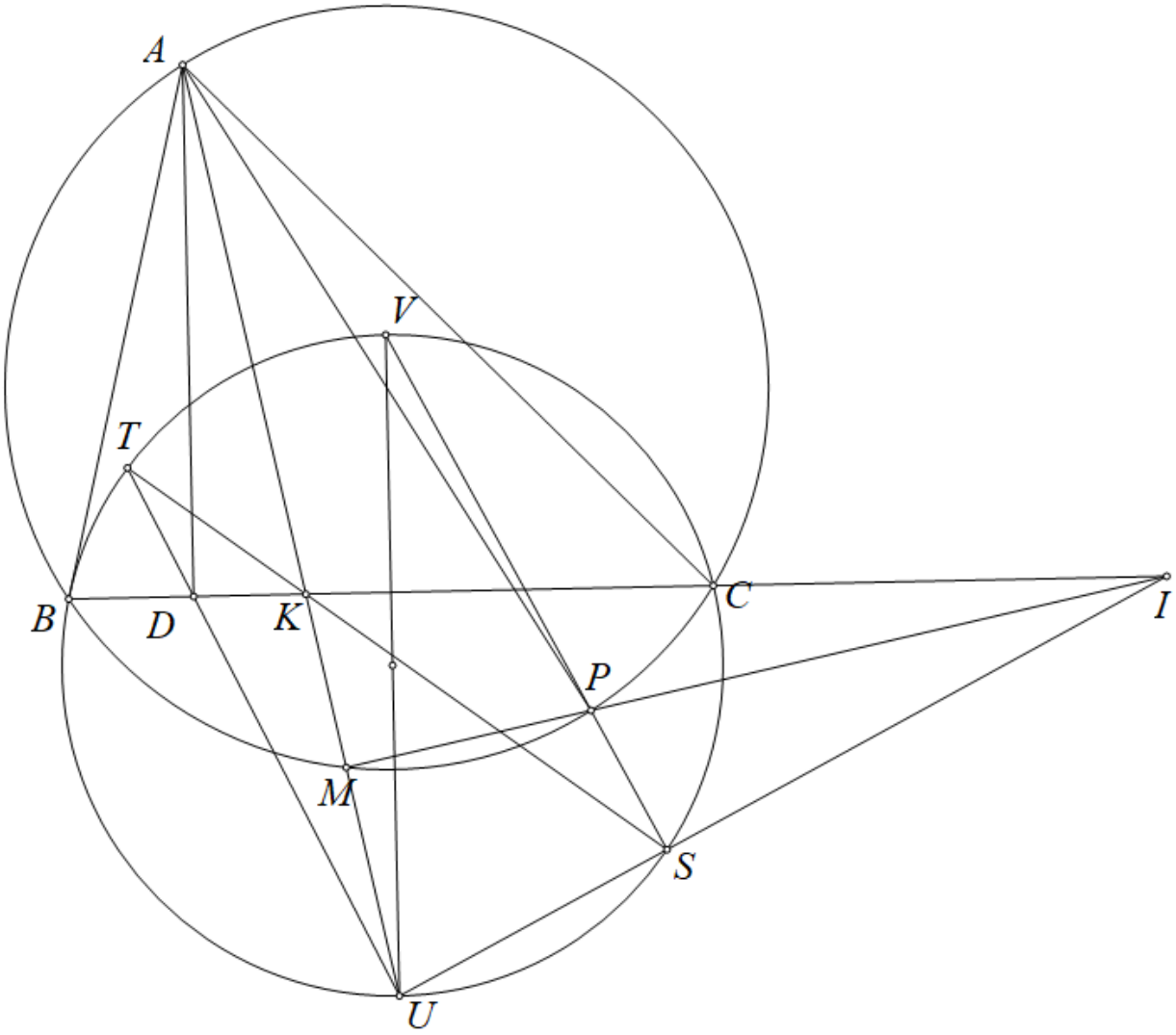

Let AU intersect Γ at M then MP, US, BC concurrent at W which is the radical center of Γ, (UP) and $(BUCV)$.
Therefore $KT.KS = KB.KC = KA.KM = KW.KD$ and $TSDW$ is cyclic.
Since U is the midpoint of arc BC of (UV), by angle chasing we get $\angle USC = \angle UCW$
Hence $\angle DTS = \angle UWC = \angle UCS = \angle UTS$ therefore D, T, U is collinear.