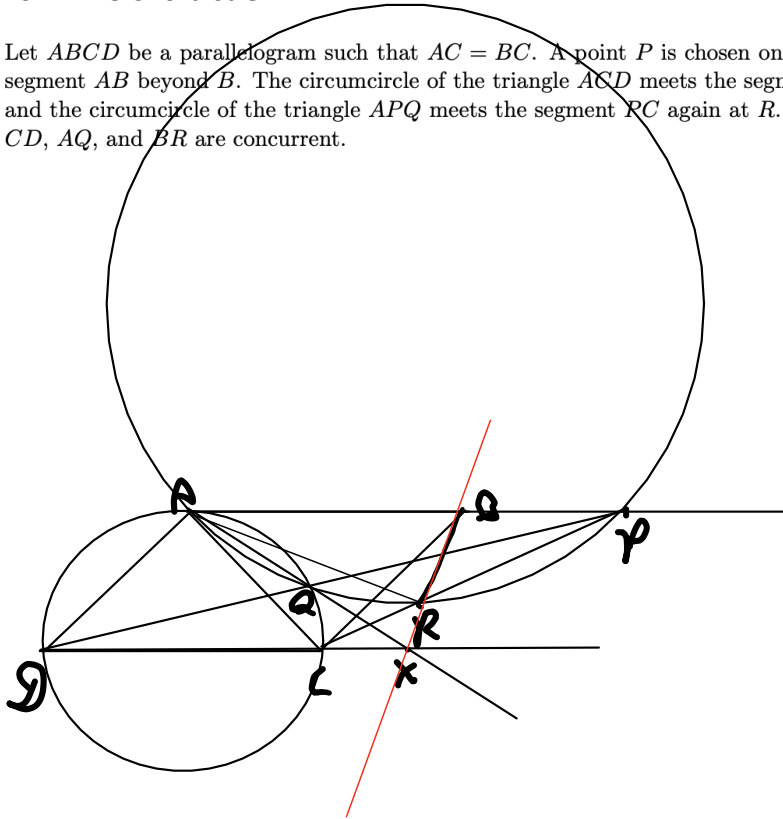


2021 IMO Shortlist G1

Let $ABCD$ be a parallelogram such that $AC = BC$. A point P is chosen on the extension of the segment AB beyond B . The circumcircle of the triangle ACD meets the segment PD again at Q , and the circumcircle of the triangle APQ meets the segment PC again at R . Prove that the lines CD , AQ , and BR are concurrent.



$$\angle D \cap A Q \cap B R$$

$$(\angle C R B)$$

$$\angle C R A = 180 - \angle A R P$$

$$= 180 - \angle A Q P$$

$$= \angle A Q D$$

$$= \angle A C D$$

$$= \angle B A C$$

$$= \angle A B C$$

□

$$(\angle Q C X R)$$

$$\angle X Q R = 180 - \angle A Q R$$

$$= \angle A P R = \angle A P C$$

$$= \angle P C X = \angle R C X$$

□

$$\angle C R X = \angle C Q X$$

$$= 180 - \angle C Q A$$

$$= \angle A D C$$

$$= \angle A C D$$

$$= \angle A B C$$

$$= \angle B A C = 180 - \angle C R B$$

□