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Union Closed Conjecture

Piotr Wójcik introduced normalized union closed family and showed that the Frankl's union closed conjecture is equivalent to: for any normalized union closed family $\mathcal{F}$, there is a generator G of $\mathcal{F}$ with $|G| \geq \frac{|\mathcal{F}|}{2}$. We showed that if the family $\mathcal{F}$ is the minimal counter example to the Wójcik's statement, then $|\mathcal{F}|$ is odd and it has a generator with size $\frac{|\mathcal{F}|-1}{2}$. Additionally, for any normalized union closed family $\mathcal{F}$, we proved that the number of generators in $\mathcal{F}$ being at least $\frac{|\mathcal{F}|-1}{2}$ is sufficient for the existance of a generator G in $\mathcal{F}$ with $|G| \geq \frac{|\mathcal{F}|}{2}$.