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$W_6 * S_n$ 的交叉数

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On the crossing numbers of $W_6 * S_n$

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- 摘要
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摘要 早在20世纪50年代, Zarankiewicz 猜想完全2-部图 $K_{m,n}$ ($m \leq n$) 的交叉数为 $\lfloor \frac{m}{2} \rfloor \lfloor \frac{m-1}{2} \rfloor \lfloor \frac{n}{2} \rfloor \lfloor \frac{n-1}{2} \rfloor$ (对任意实数 x , $\lfloor x \rfloor$ 表示不超过 x 的最大整数). 目前这一猜想的正确性只证明了当 $m \leq 6$ 时成立. 假定著名的Zarankiewicz的猜想对 $m=7$ 的情形成立, 确定了6-轮 W_6 与星 S_n 的笛卡尔积图的交叉数 $cr(W_6 \times S_n) = 9 \lfloor \frac{n}{2} \rfloor \lfloor \frac{n-1}{2} \rfloor + 2n + 5 \lfloor \frac{n}{2} \rfloor$.

关键词: 交叉数 轮 联图 星图 笛卡尔积

Abstract: In the early 1950s, Zarankiewicz conjectured that the crossing number of the complete partite graph $K_{m,n}$ ($m \leq n$) is $\lfloor \frac{m}{2} \rfloor \lfloor \frac{m-1}{2} \rfloor \lfloor \frac{n}{2} \rfloor \lfloor \frac{n-1}{2} \rfloor$ (for any real number x , $\lfloor x \rfloor$ denotes the maximum integer that is no more than x). At present, the truth of this conjecture has been proved for the case $m \leq 6$. This paper determines the crossing number of the Cartesian product W_6 with S_n is $cr(W_6 \times S_n) = 9 \lfloor \frac{n}{2} \rfloor \lfloor \frac{n-1}{2} \rfloor + 2n + 5 \lfloor \frac{n}{2} \rfloor$, provided that Zarankiewicz's conjecture holds for the case $m=7$.

Keywords: [crossing number](#), [wheel](#), [join product](#), [star graph](#), [Cartesian product](#)

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