Equal values of Combinatorial numbers

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(joint work with Ákos Pintér)

Let S_k^n be the Stirling number of the second kind with positive integer parameters n and k, i. e. S_k^n is the number of partition of n elements into k non-empty sets. We formulate the following conjecture concerning common values of Stirling numbers.

Conjecture. *Let $1 < a < b$ fixed integers. Then all the solutions of equation $S_a^x = S_b^y$ with $x > a, y > b$ are $S_5^6 = S_2^5 = 15$ and $S_{90}^{91} = S_2^{15} = 4095$.*

We prove the conjecture for $\max(a, b) < 300$, extending our earlier result. The proof is based on Baker-method, elementary estimations and grid computational technique.