**Dynamic Programming—Matrix Chain Optimization**

## 1. Notation.

The *matrix-chain multiplication problem* can be stated as follows: given a chain $< A_1, A_2, \ldots, A_n >$ of $n$ matrices, where for $i = 1, 2, ..., n$, matrix $A_i$ has dimension $p_{i-1} * p_i$, fully parenthesize the product $A_1 A_2 A_n$ in a way that minimizes the number of scalar multiplications.