

# Applying Fubini's Principle (and more) in Discrete Math and in Combinatorics

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$$\sum_{k=0}^n \binom{n}{k} = n!$$

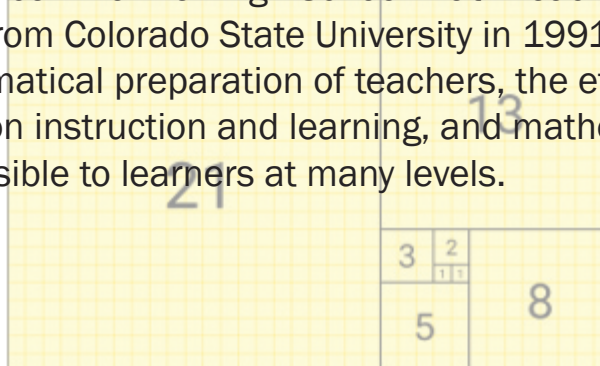


**Guido Fubini** (1879–1943) was an Italian mathematician who worked in many different areas including analysis, the calculus of variations, and group theory. He has been called “one of the most luminous and original minds in mathematics during the first half of the twentieth century (Biographer P. Speziali).” Calculus students have likely encountered “**Fubini Principle**” through his theorem in measure theory that established conditions under which a double integral can be computed as an iterated integral and thus does not depend on the order of integration. In discrete mathematics, Fubini’s Principle allows a change in the order of summation for nested sums. In combinatorics, applying Fubini’s Principle is more of a heuristic: “If you can’t count something directly (or if it seems tedious to do so), try to express the count in two different ways, and then set the two expressions equal to one another.” My first colloquium on the application of Fubini’s Principle was in September of 2014. Expect to see new and improved examples, a combinatorial proof or two, and Euler numbers. If you wish for more counting in your life, this is the colloquium for you!

**Dale Oliver** is completing his 35<sup>th</sup> year as a professor in CPH’s Department of Mathematics and Data Science. A former High School Math Teacher, he earned his Ph.D. in Algebraic Combinatorics from Colorado State University in 1991. His professional interests include the mathematical preparation of teachers, the effects of professional development for educators on instruction and learning, and mathematics (especially combinatorics) that is accessible to learners at many levels.

**THURSDAY**  
**Apr. 23, 2026**

**4:00 PM**  
**BSS302**



**FOR MORE INFO GO TO <https://math.humboldt.edu/get-involved/mathematics-colloquium>**

**We cordially invite you to the PRE-COLLOQUIUM TEA in BSS#312**  
**at 3:30 PM**