

Math Department Master Lecture: Prof. Philippe Souplet Explores the Resonance Between Mathematics and Music Through Jazz Piano

Campus focus

The Department of Applied Mathematics and Data Science held a master lecture on October 29 at 4:00 p.m. in the Carrie Chang Music Hall, inviting Professor Philippe Souplet from the Department of Mathematics at Université Sorbonne Paris Nord to speak on the theme “Mathematics and Music: A Collaborative Combination.” The event featured a special joint performance with French jazz vocalist Sonya Pinon and drew more than 170 faculty members and students, creating an enthusiastic atmosphere.

The event opened with remarks from Distinguished Research Chair Professor Jung-Shenq Guo, who introduced Prof. Souplet as not only a renowned mathematician with over 130 international publications in the field of partial differential equations, but also a highly accomplished professional jazz pianist.

Prof. Souplet began by using vivid examples to reveal the intriguing connection between mathematics and music. Starting with the musical notes C, D, E, F, G, A, and B, he explained how musical phrases and sound frequencies correspond to mathematical models, demonstrating the rigorous mathematical logic underlying musical structure. He then shared his own journey of simultaneously pursuing mathematical research and musical composition, emphasizing that both disciplines require creativity, intuition, and a structured approach to thinking. He further noted that jazz improvisation is not arbitrary but is built upon solid theoretical foundations and pattern recognition, processes closely aligned with how mathematicians approach problem-solving.

Following the theoretical introduction, Prof. Souplet transitioned to piano performance, presenting 4 pieces ranging from Fats Waller’s “Alligator Crawl” to “Stride Fantasy,” an adaptation of Chopin’s Fantaisie-Impromptu. Through lively harmonies and rhythms, he transformed abstract mathematical concepts into tangible musical expressions. Sonya Pinon then

performed jazz classics such as “Summertime” and “In a Mellow Tone.” With her rich, expressive voice, she invited the audience to join the rhythm through clapping and finger snapping. Her vocals intertwined seamlessly with Professor Souplet’s piano, at times soulful and at times bright, transforming mathematical structure into an emotional experience. PinDon shared that this was her first performance in Taiwan and her first time singing on a university campus, making it a memorable experience. As the audience erupted in applause, Prof. Guo led the crowd in calling for an encore. In response, Professor Souplet and PinDon performed the charming French chanson “C’est Si Bon” (It’s So Good), bringing the event to a delightful close.

Hui-En Lin, a first-year student from the Department of Applied Mathematics and Data Science, shared that he has always been passionate about both mathematics and music, which made attending the lecture an easy decision. He was amazed by the deep theoretical connections between the two disciplines. “How are Do, Re, Mi determined in terms of pitch and interval? Why do some harmonies sound dissonant?” he reflected. These questions relate to tuning systems and frequency ratios, concepts constructed through mathematics. “This special lecture has inspired me to continue exploring their hidden beauty.”

Yen-Jie Wang, a second-year student from the Department of Chemical and Materials Engineering, shared that, because his friend is a musician, he paid particular attention to Sonya PinDon’s vocal tone and found it incredibly beautiful, as if transported to a French restaurant. Professor Souplet’s performance, he noted, highlighted the mastery and artistry involved in blending music and mathematics, making the event an unforgettable experience.



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