Two Anniversaries, Diverse Traditions: 80 Years (2026) and 150 Years (2027) of the Physical Society of Japan

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Introduction

The Physical Society of Japan (JPS) was established in 1946, tracing its origins back to its predecessor, the Tokyo Sugaku Kaisha (Tokyo Mathematical (or Mathematics) Society), which was founded in 1877. Below, I will briefly examine the history of the Society that has dual origins, alongside the history of physics in Japan, highlighting but a few key events that illustrate its diverse characteristics.

1. The Tokyo Mathematical Society (1877), the Tokyo Mathematico-Physical Society (1884), and the Physico-Mathematical Society of Japan (1919)

The Tokyo Mathematical Society was formed by 117 scholars, a majority of whom (83) specialized in Japanese traditional mathematics (*Wazan*). Reflecting their interests, the society's periodical, *Tokyo Sugaku Kaisha Zasshi* (Journal of the Tokyo Mathematical Society), published articles in question-and-answer format in Japanese. Since the membership expanded to include physicists, astronomers, and scientists from related fields, the Society was renamed Tōkyō Sūgaku Butsurigaku Kwai (Tokyo Mathematico-Physical Society) in 1884, and its journal became *Tōkyō Sūgaku Butsurigaku Kwai kiji* (Proceedings of the Tokyo Mathematico-Physical Society).

Because members trained in Western methodologies favored Western conventions, they proposed in 1885 that Japanese-language articles and reports be transliterated using the Roman alphabet (Romaji). Although accommodations were initially made for traditional mathematicians to publish in Japanese, non-native languages—specifically English, German, and French—eventually predominated in the publication's corpus, underscoring Japanese scientists' drive to promote their research to Western audiences. In 1919, as educational and research institutions expanded nationwide, the Society was renamed Nippon Sugaku-Buturigakkwai (Physico-Mathematical Society of Japan).

2. A Challenge: The Atomic Model

Nagaoka Hantaro, who wrote in 1888 to his senior mentor Tanakadate Aikitu—then studying in England—declaring, "there is no use of observing the victory of our descendants over the whites with the telescope from jigoku [hell]," exemplifies the direct challenge to the West. He presented the Saturnian atomic model featuring an independent nucleus, in Tokyo in 1903. However, though Henri Poincaré and Oliver Lodge took note of it, the model was dismissed when W.H. Bragg wrote to Ernest Rutherford in 1911, remarking that "it was by [a] Jap anyway." Nagaoka himself later

observed in his Nobel Prize recommendation letter in 1912, “The scientific research in Japan is still in its infancy,” adding that “most of the investigations bear the character of routine work.” He estimated that “it will perhaps be in the coming generation that one deemed for receiving the Nobel prize will ever appear.”

3. Quantum Mechanics and Meson Theory

The emergence of quantum mechanics transformed the framework of physics and enabled novel intellectual pursuits, a prime example of which was meson theory, presented by Yukawa Hideki in Sendai in 1934. Ignored abroad for several years, the theory gained global attention in 1937 when J.R. Oppenheimer and Robert Serber identified Yukawa’s predicted particle in cosmic-ray photographs. Nominating Yukawa for the 1940 Nobel Prize, Nagaoka wrote, “It is for the first time that I suggest my compatriot as recipient of the Nobe prize with full confidence.” Experimentalists were likewise inspired; at the Institute of Physical and Chemical Research (RIKEN), for instance, scientists sought to construct a 60-inch cyclotron following the completion of a 26-inch model in 1937.

During the Pacific War, academic journals suffered under paper rationing; by 1944, foreign-language publications were broadly suspended. However, the Physico-Mathematical Society insisted on issuing its European-language journal and successfully persuaded the authorities.

4. The New Start after the War

The Physico-Mathematical Society of Japan dissolved at the end of 1945, giving rise to two newly established organizations in 1946: Nihon Butsurigakkai (Physical Society of Japan, JPS) and Nihon Sugakkai (Mathematical Society of Japan). As symbolized by the atomic bombings, the impression emerged in August 1945 that Japan had lost the Pacific War in terms of scientific warfare—or more accurately, physical warfare. Furthermore, whether through deliberate policy or administrative error, Japan’s four operational cyclotrons were destroyed under orders from the U.S. Army. However, ongoing theoretical and experimental developments during and after the war yielded definitive empirical evidence for meson theory, leading to Yukawa Hideki becoming the first Japanese Nobel laureate in 1949.

In a letter to the Nobel Committee that year, Arthur H. Compton wrote the following regarding Yukawa’s work: “I really question whether Yukawa’s production [prediction?] of the meson was much more than a happy inspiration and whether in fact it had any effect on its actual discovery.” His tone came close to saying, “by [a] Jap anyway.” Nevertheless, Yukawa’s award galvanized the JPS during its resource-starved restart, revitalizing a community in the midst of rebuilding. Thus, carrying forward a nearly seven-decade tradition of engaging globally while preserving its Japanese character, the JPS set out toward its next 80 years.