Contribution ID: **31** Type: **Parallel**

The Sill distribution for p-wave and beyond

Friday, 26 June 2026 18:00 (20 minutes)

The description of short-lived resonances in high-energy physics is commonly based on the relativistic Breit–Wigner spectral function, which, despite its phenomenological success, does not satisfy certain fundamental constraints, most notably the presence of a non-zero energy threshold. More consistent approaches are therefore required; one such alternative is the Sill distribution (see, e.g., Eur. Phys. J. A 57 (2021) 336), which incorporates the correct threshold behaviour and has been employed in experimental analyses, including by the ALICE collaboration (Eur. Phys. J. A 61 (2025) 194). In this work, we extend this framework beyond the s-wave case by constructing its p-wave (and, more generally, l-wave) generalisation, obtaining simple expressions depending on a small set of parameters, suitable for applications in collider data analyses, such as those for Δ resonances.

Collaboration

Primary author: KYZIOŁ, Krzysztof (Jan Kochanowski University of Kielce)

Co-authors: GIACOSA, Francesco (Jan Kochanowski University of Kielce); SHASTRY, Vanamali (Indiana University Bloomington)

Presenter: KYZIOŁ, Krzysztof (Jan Kochanowski University of Kielce)

Session Classification: Parallel session B4

Track Classification: Hadron-hadron interactions