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Beyond Signs: Co-designing a Colombian Sign Language Lexicon for High-Energy Physics Outreach

High-energy physics (HEP) relies on abstract mathematical formalisms and specialized jargon, creating a substantial communication barrier. For the Deaf community, this barrier is even greater: Colombian Sign Language (LSC) lacks standardized terminology for concepts such as quarks, neutrinos, or the Higgs boson. Building on previous work in inclusive physics education at Universidad del Tolima, we propose a didactic strategy grounded in the visual-gestural modality of LSC and built on two core elements: color-based analogies for quantum properties and visuospatial iconography for decay processes. In parallel, we are co-designing new LSC signs for HEP concepts with interpreters and members of the Deaf community. Preliminary results from implementations with Deaf students in Ibagué, Colombia, indicate improved concept retention: participants identified and described particle interactions, suggesting that abstract ideas such as antimatter can be communicated effectively without relying solely on spoken language. This work contributes to public engagement with HEP by offering a replicable, low-cost framework that makes modern physics accessible to the Deaf community.

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