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A sonification atlas for CREDO cosmic ray detections: Basis for Dark Matter and Dark Photon Investigations

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The search for the unseen matter will persist as desirable as a pinnacle discovery for humankind. The opportunity about the ethereal richness of the information composing the universe is not a delusion, but a disposition of curiosity although seemingly without an answer up to this date. The infinity of suspicions whether dark matter is (un)real do not rest on anticlimactic futility of knowing less after knowing more the fundamental implicitness of the universe, which we define in accord to epistemology of the standard model (SM). Positivism dictates (dis)approval, but the exploration of the pieces of (mis)detected information about dark matter is counterintuitive: we process the analyses within a silo of 'methodical reductionism'(i.e., subtracting noise from data and polishing all statistical asymmetries) and yet unification is sought desperately from missing
representations of dark matter alluded to signals from ordinary matter. Restipulation of infinity in the context of discourses about this unknown matter declares multiple, 'strange complexities'(i.e., beyond an observer's ability to reconcile scientific inquiries with available methods). The held principal conjecture is a featureless energy landscape and a departure of the quantumness of matter from the effects of classical gravity. This dichotomy is not a binominal reality to approach rather a paradox full of uncertainty where a proposed grand measurement will neither satisfy nor come close to the demand for scientific prudence and erudition for current physics skeptics.

The construct about mass applied to dark matter studies poses to be an 'irrelevant conception'(simply arbitrary) and becomes 'illusory to absurd'(mathematically perceptible somehow but astonishingly less risky in contemplation than avoid a controversy) to try forge a model of irradiance (h) indirectly by elusive particles. Modeling of ordinary matter takes the foreground measurement while the background detection may assume dark matter. Unsurprisingly, measurement leaves incompleteness either by evidence or explanation of results. Thus, gaps will be patched up abductively. We may propose that ordinary matter superimposes dark matter and if
the former can be peeled off then it is groundbreaking methodically. Another is to imagine them looping on either side of a continuous string-like Möbius membrane and a puncture across after forcing a great amount of energy over ordinary matter will unleash elusive particles just as particle colliders operate and offer a glimpse of intricacies of matter within matter.
On the trail of thought connected to the previous paragraph, asking why versus how
particles are elusive at the realm of data analysis yields to a frugal numerical output. Infinity incalculation bifurcates: first to a technical limitation and second to a premature impulsivity when denoting representation of the unaccountable, invisible matter by showing a numerical depreciation. Imaginary numbers translate to infinite ignorance of the computations even at both ends of the bifurcation. Exhaustive rigor in the analysis of data is relative to the level of explanatory ignorance to resolve the frustration in value approximation and this cannot be succinct exploratorily with numerical representations. So, for a nontechnical individual who desire to understand incredible (work on the) big data will not persist. Presentation of scientific data to convincing facts may look arrogant due to the richness of its meanings. Communication to the public becomes highly decorated with charts embedded with impressive statistical jargons.
Elusive numerical frequencies are locked into incognito in the detected cosmic rays, but
we operationalize the signal detection with what the SM has like using photons to accept the hypothesis of dark photons. Dark matter and dark photons cuts SM boundaries. Nominating particle candidates for dark matter offers a leeway. Reframing how we look at SM would be unorthodox. The consequence is accentuating its gray areas. However, this consequence should create new windows for physics. Specifically, inclusion of diverse interpretivism of particle detections accomplished through data sonification. We have to cleverly and creatively improve the interpretability of particle physics so it stays relevant to society wherein everyone can engage regardless of educational background, profession, socioeconomic status, and humanitarian crises (e.g., war, pandemic, etc.). Candidly, the equations framing particle physics may tirelessly (or may not) appeal among who can(not) articulate a connection between 'objective eroticism'(nonorganic
pleasure of wanting complexity) and paralysis from 'uncomprehensible cognitive load'(deep thinking).
The phenomenon in question exists as whole data. Methodical rigor involves (expensive) data extraction and

manipulation. The latter gives rise to novel distortion instead of preserving natural perturbations as true anomalies in the frequency details (e.g., astrophysical event detections), but then is knowingly remodeled to fit into or (ful)fill what the naked eye can account.
The oversight of data proceeds to overarching answers despite there is fragmentation in data patterns. Therefore, we lose the phenomenon in question each data processing. Further, data analysis is tainted by unfounded priori, which are actually general claims when expecting dark matter to be (or must be) very unusual findings. So, the story out of the data can (or must) appear fancy based on asymptotic signal fluctuations against the behavior of signals from ordinary matter.
However, conventional elucidation of cosmic ray detections is until the frontiers of data
visualization. Sophistication of experiments reported in literature fail to provide meaningful depth of interpretation of the phenomenon using visual inferences. To divorce dark matter from analysis of ordinary matter representation in the data is thought acceptable by mass difference determination. Alternatively, dark matter can be the relocation of energy buried in the unattractive data patterns. Zooming into these patterns visually does not guarantee salience to the observer.
Through sonification, minuteness between data points (despite simultaneous with overlaps) can be resonated and amplified with the opportunity of equivocal synopsis of correlative findings while matter in query is audibly and visually interpreted. Peculiarities can mean unveiling the (ambiguous) interphase of ordinary matter and dark matter.
We should aim for malleable reproduction of data analysis techniques so we can generate and weave empirical evidence together through practice of interdisciplinarity. Also, we take advantage of knowledge cross-fertilization. High-energy astrophysics could be helpful in the development of space nursing research focusing on cosmic radiation and health of astronauts and space tourists if nurse scientists will understand astrophysics data. Same predicament with communication if researchers are unable to laymanize and disseminate varying levels of scientific content to nontechnical stakeholders including students. However, to bring synergy between many disciplines and lucrative investment opportunities supporting research endeavors, it is imperative
to move the goals of understanding (astrophysics) data up to speed along with public engagement in science because it is worth everybody's interest.
Data sonification is not a segway to (over)simplification of data analysis rather it is
instrumental to discover and rediscover what truly matters when the eyes more often find ordinary results. Feynman diagrams are blueprints of possible particle interactions. On the other hand, towards an ingenious data representation, hearing how a Feynman diagram sounds is a remarkable experiential learning of particle physics.
The extensive data analyses shown in the presentation aims to provide: (1) a sonification atlas using CREDO cosmic ray detections; (2) unique interpretation of data by sonification; and (3) representation of plausible dark matter and dark photon in the data.

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