▸ JOACHIM MUELLER-THEYS, *A Mathematical Model of the Atom.*
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Following the idea of Wilfried Buchholz, we model the fundamental concept of atomic physics and chemistry by *3-tuples*

$$A := (P, N; E),$$

whereby $P \neq \emptyset$, N, E be *finite sets* of protons, neutrons, electrons respectively. Accordingly, (P, N) models the *nucleus* of A.

In the next step, *functions* assign the numbers of protons, neutrons, electrons:

$$\pi(A) := |P|,\ \nu(A) := |N|,\ \varepsilon(A) := |E|.$$

The definitions for *(atomic) ions* now arise immediately—not requiring higher conceptuality. For example, A is an *anion* if $\varepsilon(A) > \pi(A)$.

The proton number function induces the *equi-valence*

$$A \simeq_\pi B :\Longleftrightarrow \pi(A) = \pi(B).$$

Cf. "Equivalence", The Bulletin of Symbolic Logic 28 (2022), pp. 564-5 (with the misprint $\bigcup \mathcal{P}$).

Now the *equivalence classes*

$$A/\pi := A/\simeq_\pi := \{B\colon B \simeq_\pi A\},$$

constituting a partition of the atoms, model the *(chemical) elements*. Each element A/π is characterized by $\pi(A)$. Eventually, these *order numbers* may be assigned to names and symbols, like hydrogen, $\mathrm{H} \mapsto 1$. (*Compare* "A Mathematical Linguistics", BSL 24 (2018), pp. 114-5 (ASL@JMM2017 (Atlanta))).

Moreover, the equi-valence induced by the number of *neutrons* partitions each element into its *isotopes*, and underlying *systems of atoms* $\mathcal{A}$ ought to be further specified.

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