## A Minimal Interpretation

Before a measuring apparatus can be applied, one has to make sure that it is properly calibrated for measuring an observable A.

This means that one has first to calibrate the measuring apparatus in such a way that a pointer value (observed data)  $Z_i$  corresponds to a well-defined value  $A_i$  of the measured obvservable.

If, for example, one wants to calibrate a weighing machine, one must put a body of weight  $w_i$ , say, on the apparatus and define the scale Z of the pointer such that the measurement result  $w_i$  is indicated by the pointer value  $Z_i$ .

If this method is extended to other values of Z and w, one finally arrives at some **pointer function**  $w_i = f(Z_i)$ .

## Postulates:

- 1. The calibration postulate  $(C_M)$ . If a quantum system is prepared in a state  $|A\rangle$  such that it possesses the property A, then a measurement of A must lead with certainty to a pointer value  $Z_A$ that indicates the result  $A = f(Z_A)$  of the measuring process, where f is a convenient pointer function.
- 2. The pointer objectification postulate (PO). if a quantum system is prepared in an arbitrary stste  $|\varphi\rangle$  which does not allow prediction of the result of an A-measurement, then a measurement of A must lead to a well-defined (objective) pointer value,  $Z_A$  or  $Z_{\neg A}$ , which indicates that the property  $A = f(Z_A)$  does or does not pertain to the object system. Here, however, the objectivity is only postulated for the pointer values and not necessarily for the corresponding system properties.
- 3. The probability reproducibility condition (PR). The probability distribution  $p(A_i || \varphi \rangle)$  that is induced by the preparation state  $| \varphi \rangle$  of the object system and the measured observable A with values  $A_i$  must be reproduced in the statistics of the pointer values  $Z_i = f^{-1}(A_i)$  after measurements of A on a large number of equally prepared systems.