$$\phi(x)\,dx = I\,\nu \sum_{i=1}^{3} f_s^{(i)}(x) = I\,\nu \sum_{i=1}^{3} F_i \alpha_i \exp(-\alpha_i x)\,dx \tag{22}$$

Here we have used as unit of length the inverse transport cross section per cm^3, σ^{-1}, of the fast neutrons in the active material. The three constants α_i are thus $\alpha_i = 1/\sigma L_i$; i = 1, 2, and 3. For convenience the sign of x has been reversed to conform with Fig. 2. The constants F_i are given by Eqs. 9, 14, and 21.

III. DETERMINATION OF THE FAST-NEUTRON CURRENT INTO THE WATER

The treatment of the fast-neutron multiplication in the slat of active material outlined here makes extensive use of the work done by Frankel, Goldberg, and Nelson in solving the inhomogeneous transport integral equation as reported in (LA-258). Throughout the treatment we make use of the fact that $\phi(x)$ [Equation (22)] becomes negligibly small at a distance x a few mean free paths into the active material as shown in the figure below.

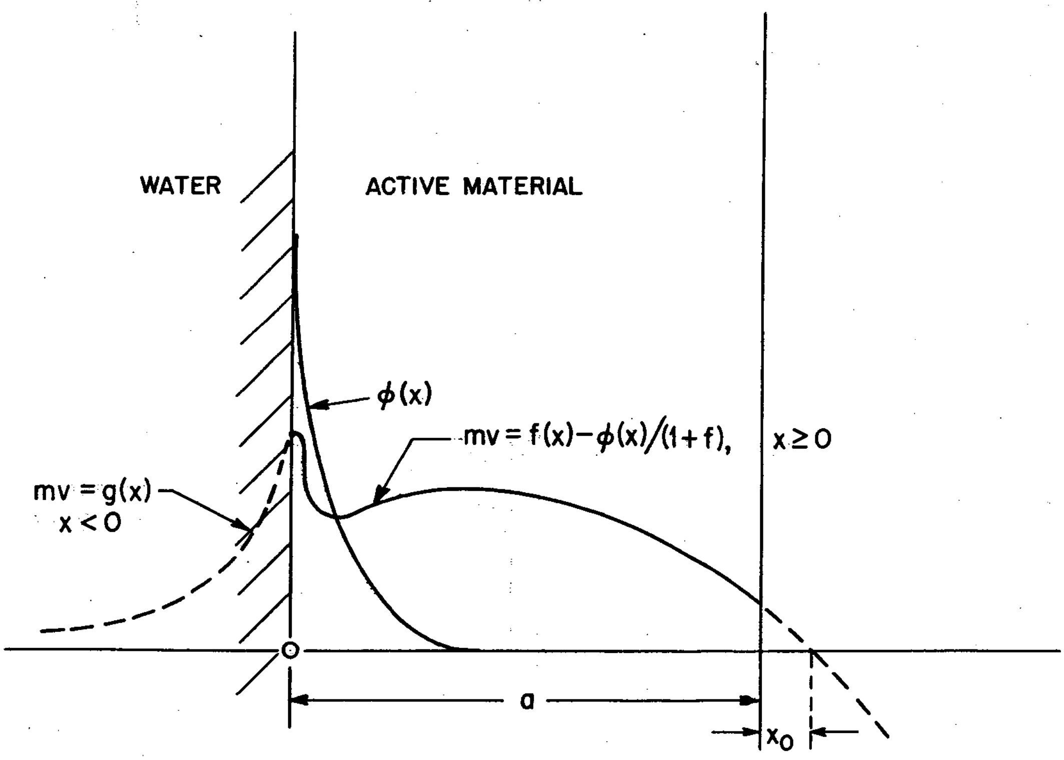

Fig. 2

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