

puzzling phenomenon: nuclei having certain values for their N or Z numbers are considerably more stable than others. These values are 2, 8, 14, 20, 28, 50, 82, and 126. These numbers were called "magic numbers," since their origin was a mystery.

Let us divide the magic numbers by 10 and express the results to the nearest integers.

X	2	8	14	20	28	50	82	126
X/10	0.2	0.8	1.4	2	2.8	5	8.2	12.6
Nearest Integer	0	1	1	2	3	5	8	13

We get the Fibonacci numbers from 0 to 13 ... !

We saw that the shell structure of the atom showed that the atomic numbers of stable atoms should be related to the Fibonacci series. The phenomenon of the magic numbers thus indicates that the nucleus also might have a shell structure. The first successful model of the nucleus, the shell model, was put forward by Maria Goeppert Mayer, Hans Jensen, and Eugene Wigner. Calculations based on the shell model successfully explained the phenomenon of magic numbers.

Thus the Fibonacci numbers seem to be associated with the stability of systems in dynamic equilibrium. Perhaps the Fibonacci sequence might help solve a number of problems in Physics.



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