Spaltung von ^{235}U nach Neutroneneinfang

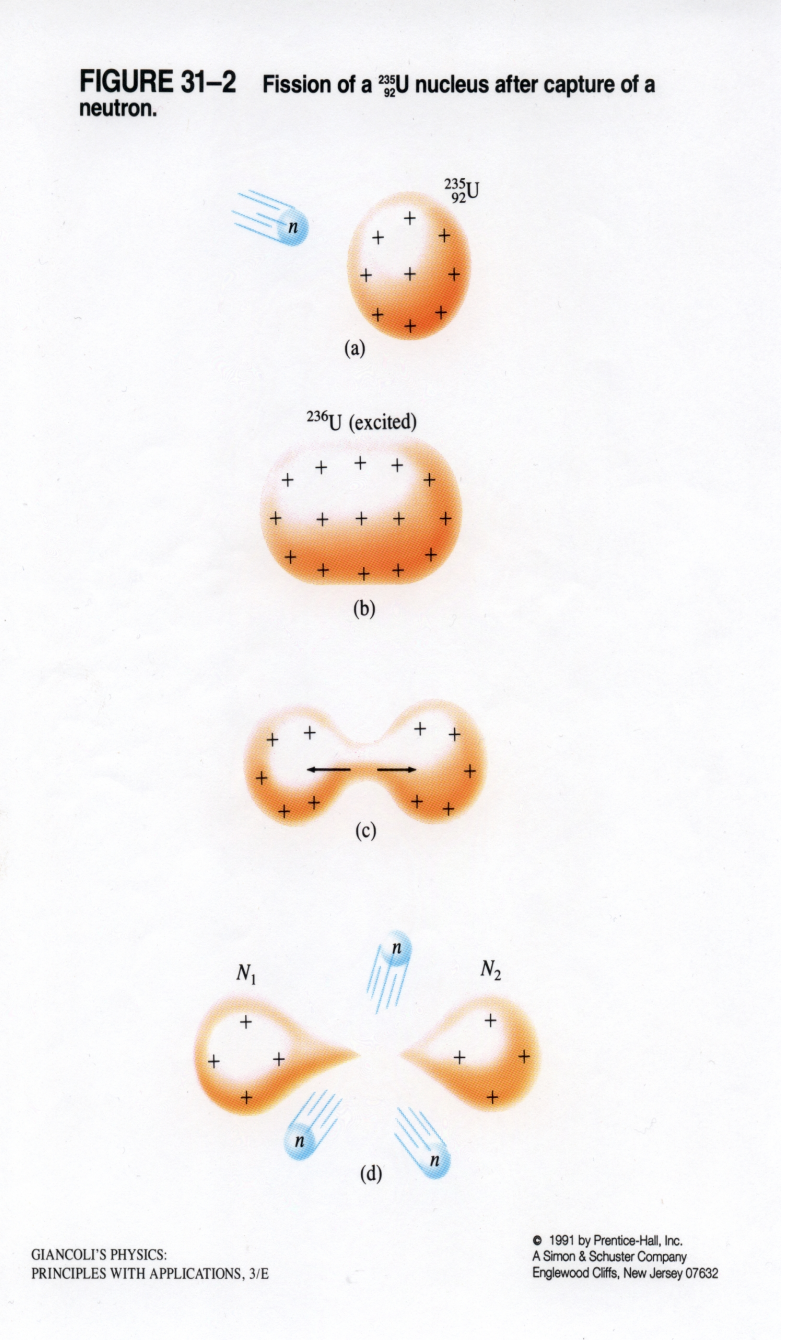


Fig. 11-1

Prinzip der Kettenreaktion:

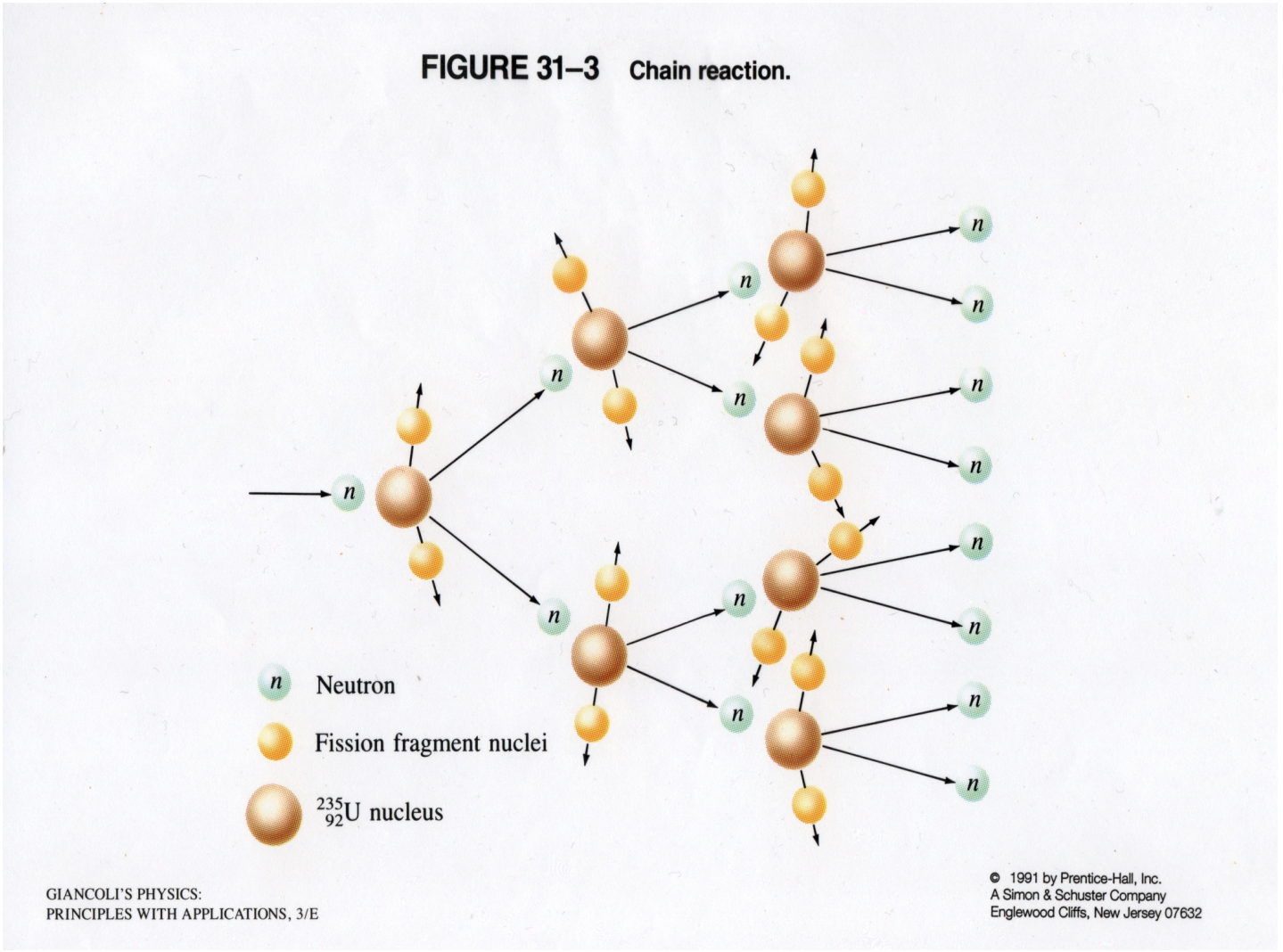


Fig. 11-2

First nuclear reactor

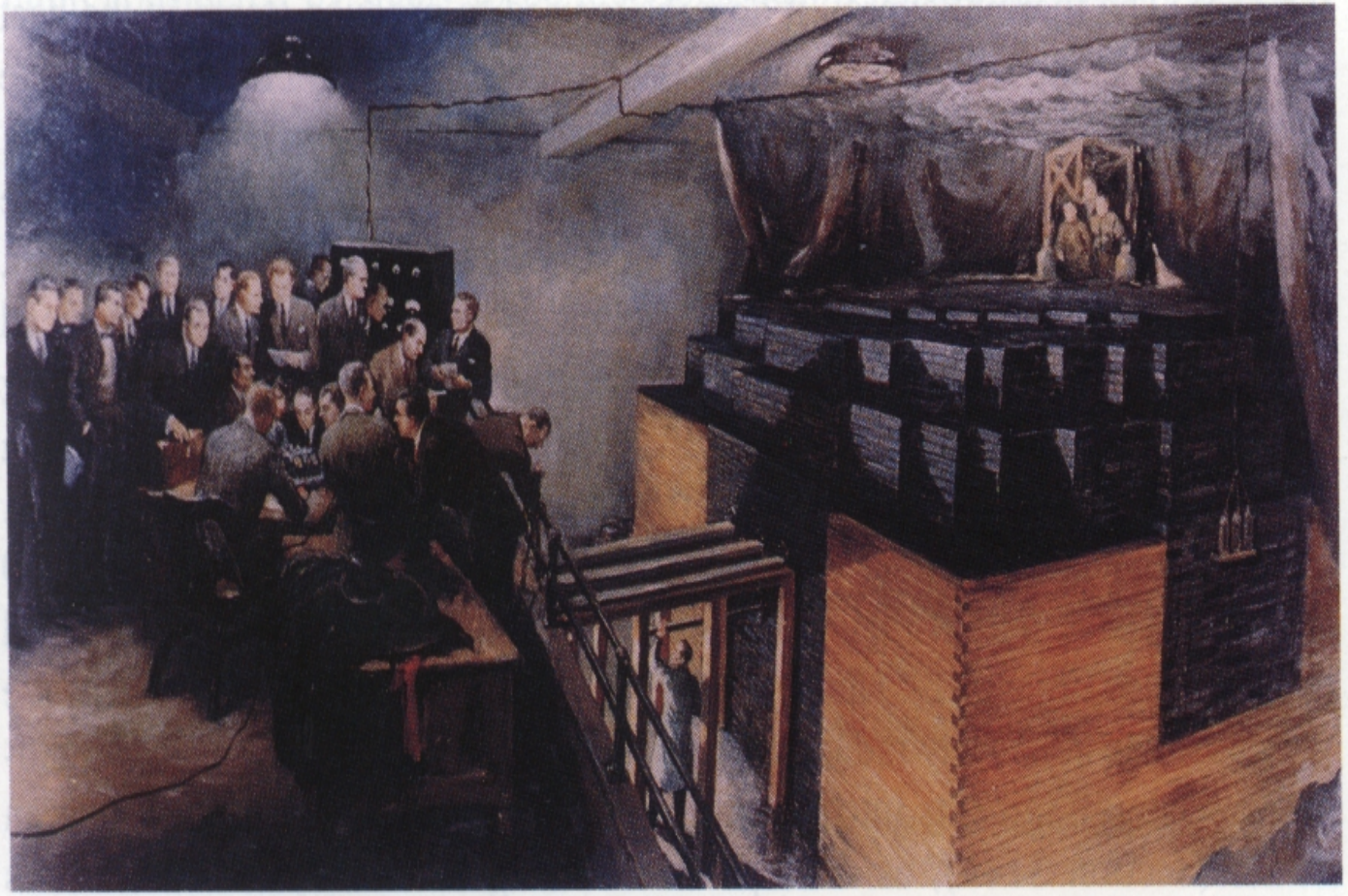


FIGURE 31–4 Color painting of the first nuclear reactor, built by Fermi under the grandstand of Stagg Field at the University of Chicago. (There are no photographs of the original reactor because of military secrecy.) Natural uranium was used with graphite as moderator. On December 2, 1942, Fermi slowly withdrew the cadmium control rods and the reactor went critical. This first self-sustaining chain reaction was announced to Washington, by telephone, by Arthur Compton who witnessed the event and reported: "The Italian navigator has just landed in the new world."

Fig. 11-3

Allgemeines Funktionsprinzip eines Kernreaktors:

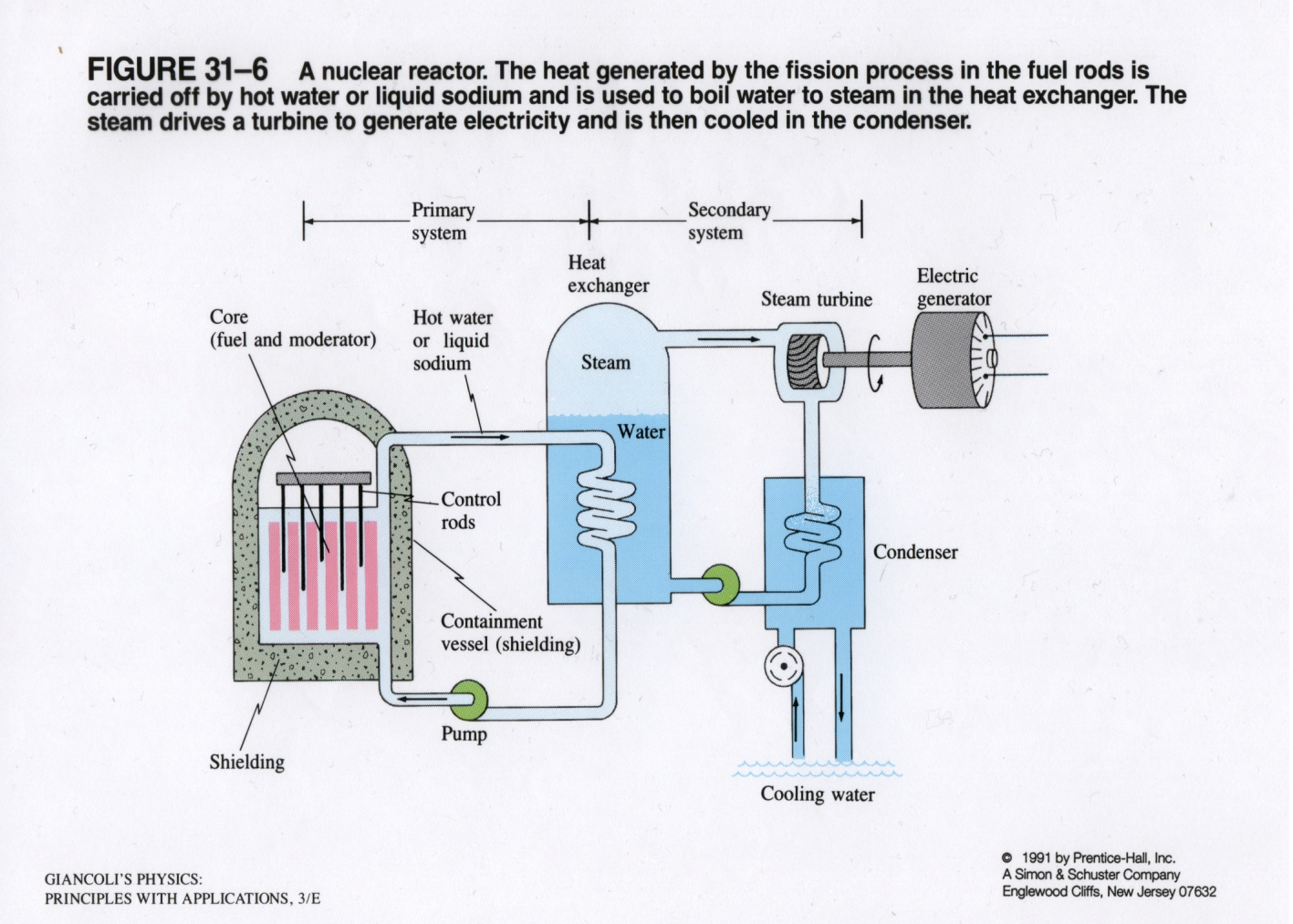


Fig. 11-4

Phasendiagramm stark wechselwirkender Materie

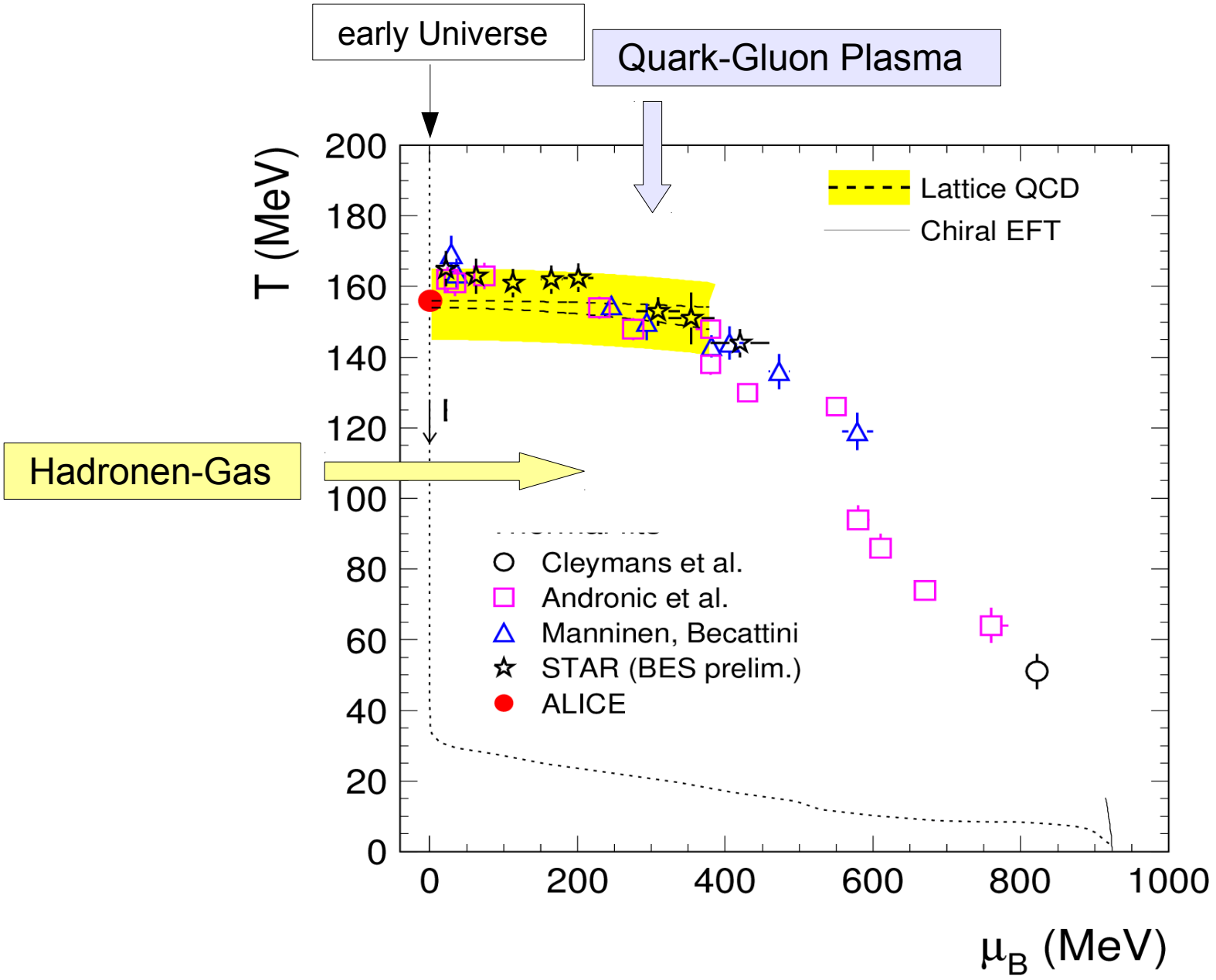
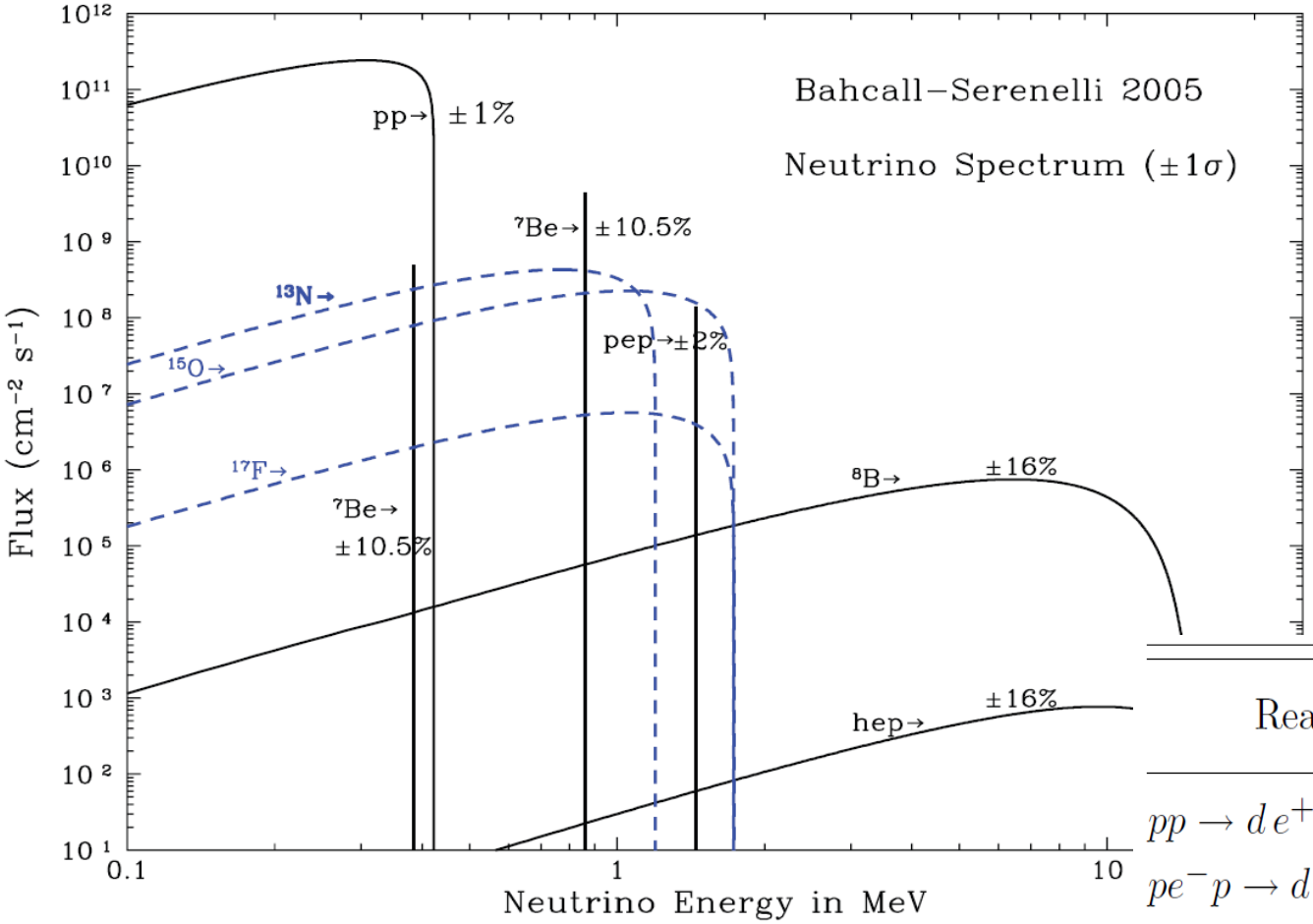


Fig. 11-5

solare Neutrinos



Review of particle properties, PDG 2015

Reaction	Abbr.	Flux ($\mathrm{cm}^{-2}\ \mathrm{s}^{-1}$)
$pp \to d\,e^+\,\nu$	pp	$5.97(1 \pm 0.006) \times 10^{10}$
$pe^-p \to d\,\nu$	pep	$1.41(1 \pm 0.011) \times 10^{8}$
$^3\mathrm{He}\ p \to {}^4\mathrm{He}\ e^+\nu$	hep	$7.90(1 \pm 0.15) \times 10^{3}$
$^7\mathrm{Be}\ e^- \to {}^7\mathrm{Li}\ \nu + (\gamma)$	^{7}Be	$5.07(1 \pm 0.06) \times 10^{9}$
$^8\mathrm{B} \to {}^8\mathrm{Be}^*\ e^+\nu$	^{8}B	$5.94(1 \pm 0.11) \times 10^{6}$
$^{13}\mathrm{N} \to {}^{13}\mathrm{C}\ e^+\nu$	^{13}N	$2.88(1 \pm 0.15) \times 10^{8}$
$^{15}\mathrm{O} \to {}^{15}\mathrm{N}\ e^+\nu$	^{15}O	$2.15(1^{+0.17}_{-0.16}) \times 10^{8}$
$^{17}\mathrm{F} \to {}^{17}\mathrm{O}\ e^+\nu$	^{17}F	$5.82(1^{+0.19}_{-0.17}) \times 10^{6}$

Fig. 11-6

Prozesse der Nukleosynthese

populieren verschiedene Gegenden der Nuklidkarte

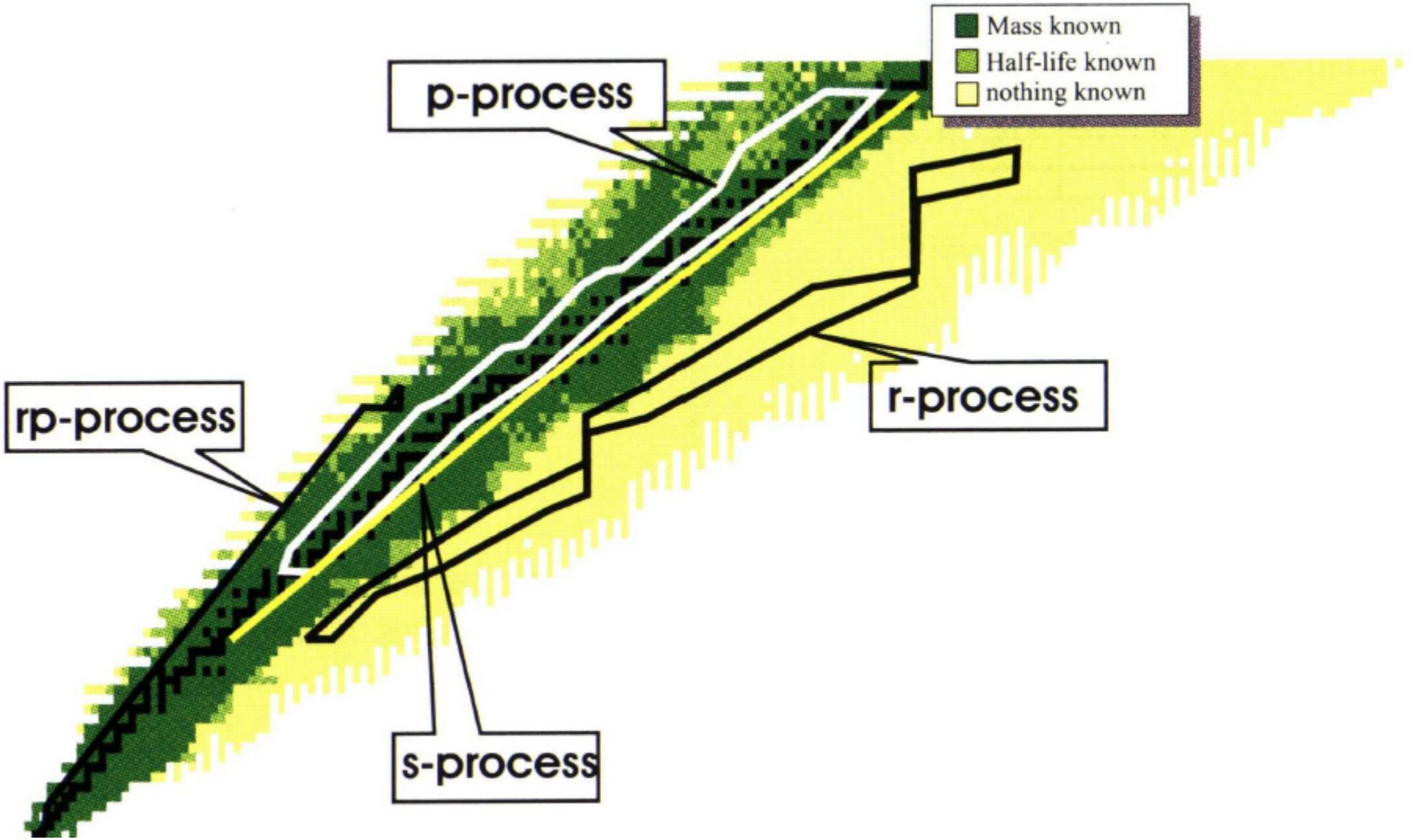
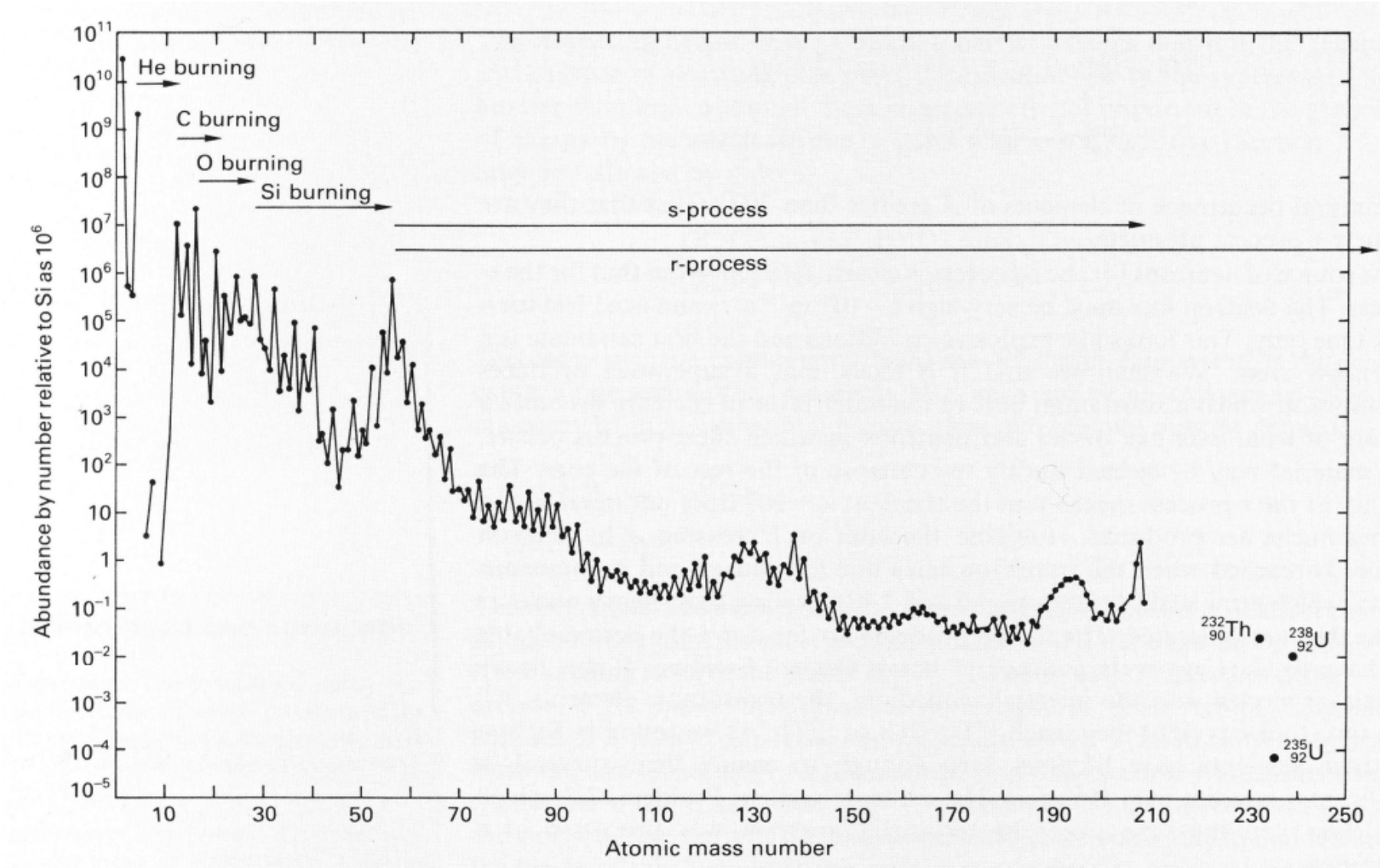


Fig. 11-7

Elementverteilung



Häufigkeit von Elementen relativ zu Silizium (Summe von A=28,29,30 auf 10^6 normiert)

Fig. 11-8