P#1: Uvod; Sažeci iz *Kvantne fizike* i *Statističke fizike*

Fizika čvrstog stanja 1

predavanja 2021

Slike, tablice, literatura

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without it comparatively little progress would have been made. If there is one reason why the theory of solids is so much more highly developed than the theory of liquids, even though both forms of matter have comparable densities, it is that the ions are arranged periodically in the solid state but are spatially disordered in liquids. It is the lack of a periodic array of ions that has left the subject of amorphous solids in so primitive a state compared with the highly developed theory of crystalline solids.[8]

Predavanja:

1) Ashcroft & Mermin, *Solid State Physics*, 1976.
2) [Ziman, *Principles of the Theory of Solids*, 1964., 1972.]
3) [Kittel, *Introduction to Solid State Physics*]

Vježbe:

1) Kupčić, *FČS, Zbirka riješenih zadataka*
2) [Kittel, *Introduction to Solid State Physics*]

Slike, tablice, . . .

primjeri kristala

Kristal anataze TiO_2

Sadržaj kolegija *Fizika čvrstog stanja 1*

P#1 Uvod; Sažeci iz *Kvantne mehanike* i *Statističke fizike*

P#2 Adijabatska aproksimacija u *Fizici čvrstog stanja*

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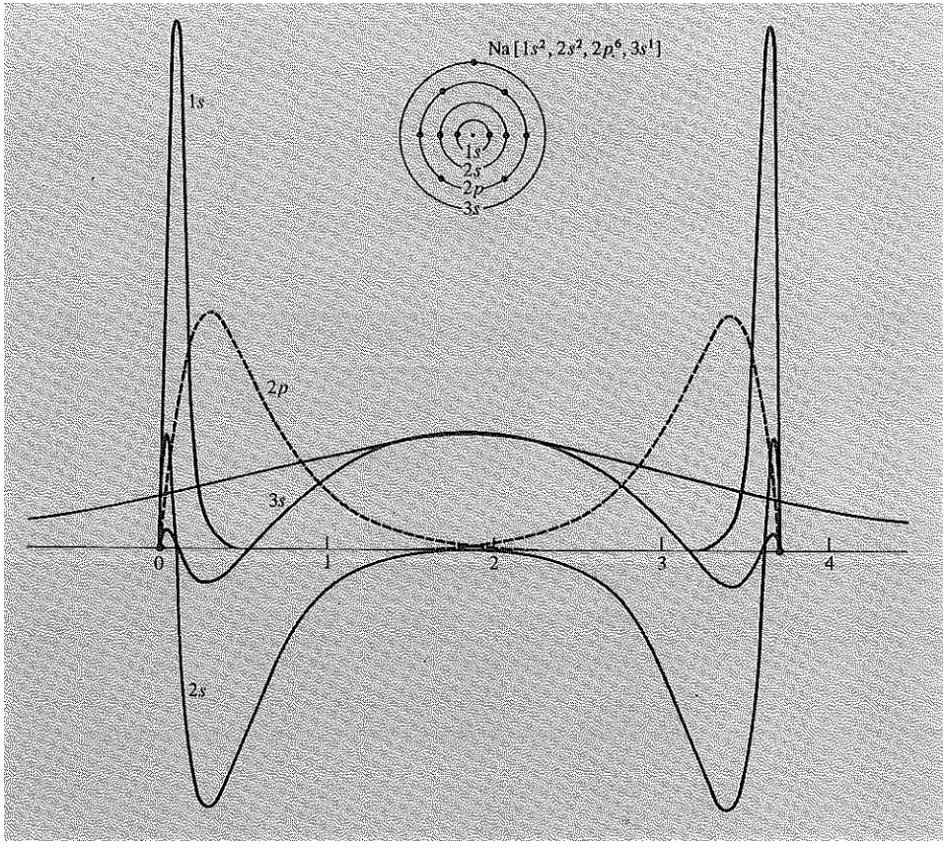
P#9 Kvantna teorija vibracija kristalne rešetke

P#10 Raspršenje X zraka i neutrona na kristalima

Slike, tablice, . . .

izračunate valne funkcije elektrona $u_{nl}(r)$ u atomskom natriju



Slike, tablice i literatura

Periodic Table, with the Outer Electron Configurations of Neutral Atoms in Their Ground States

The notation used to describe the electronic configuration of atoms and ions is discussed in all textbooks of introductory atomic physics. The letters s, p, d, . . . signify electrons having orbital angular momentum 0, 1, 2, . . . in units $\hbar$; the number to the left of the letter denotes the principal quantum number of one orbit, and the superscript to the right denotes the number of electrons in the orbit.

H^{1} $1s$																	He^{2} $1s^2$
Li^{3} $2s$	Be^{4} $2s^2$											B^{5} $2s^22p$	C^{6} $2s^22p^2$	N^{7} $2s^22p^3$	O^{8} $2s^22p^4$	F^{9} $2s^22p^5$	Ne^{10} $2s^22p^6$
Na^{11} $3s$	Mg^{12} $3s^2$											Al^{13} $3s^23p$	Si^{14} $3s^23p^2$	P^{15} $3s^23p^3$	S^{16} $3s^23p^4$	Cl^{17} $3s^23p^5$	Ar^{18} $3s^23p^6$
K^{19} $4s$	Ca^{20} $4s^2$	Sc^{21} $3d$ $4s^2$	Ti^{22} $3d^2$ $4s^2$	V^{23} $3d^3$ $4s^2$	Cr^{24} $3d^5$ $4s$	Mn^{25} $3d^5$ $4s^2$	Fe^{26} $3d^6$ $4s^2$	Co^{27} $3d^7$ $4s^2$	Ni^{28} $3d^8$ $4s^2$	Cu^{29} $3d^{10}$ $4s$	Zn^{30} $3d^{10}$ $4s^2$	Ga^{31} $4s^24p$	Ge^{32} $4s^24p^2$	As^{33} $4s^24p^3$	Se^{34} $4s^24p^4$	Br^{35} $4s^24p^5$	Kr^{36} $4s^24p^6$
Rb^{37}	Sr^{38}	Y^{39}	Zr^{40}	Nb^{41}	Mo^{42}	Tc^{43}	Ru^{44}	Rh^{45}	Pd^{46}	Ag^{47}	Cd^{48}	In^{49}	Sn^{50}	Sb^{51}	Te^{52}	I^{53}	Xe^{54}

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1) Ashcroft & Mermin, *Solid State Physics*, §§ 17.U, 17.1; 8.U, 8.1; 2.U - 2.2
2) Bethe & Jackiw, *Intermediate Quantum Mechanics*, §§ 4.1 - 4.5
3) Reif, *Fundamentals of Statistical and Thermal Physics*, §§ 9.1 - 9.3