## Contents

C	HAPT	ER I. Methods of experimental research	Pag
	Sec. 1.	Stark's method for investigation of the electric effect on emission	
		lines	9
	Sec. 2.	Lo Surdo's method for investigation of the electric effect on emis-	·
		sion lines	21
	Sec. 3.	Comparison between Stark's and Lo Surdo's method	27
		Methods for investigation of the electric effect on absorption lines	29
		4.1. Absorption in gases of radiation in the optical region	29
		4.2. Absorption in atomic-beams of radiation in the optical	20
		region	31
		4.3. Absorption in gases of microwave radiation	32
	Sec. 5.	Atomic- and molecular-beam resonance spectroscopic methods	J.
	200.01	for investigation of the electric effect	33
	Sec. 6.	Optical double resonance method for investigation of the electric	00
	DOC. 0.	effect	37
	Sec. 7	Level-crossing and antilevel-crossing methods for investigation	01
		of the electric effect	38
	Sec. 8.	Beat method for investigation of the electric effect	42
		Methods for measurement of ground state polarizabilities	42
	2001 01	1.1201110 ab 101 incasaroment of ground state polarizatings	74
7	HAPTI	ER II. Quantum-mechanical theory of the electric effect	
	Sec. 1	. General quantum-mechanical theory	44
		2. Displacements of the energy states of hydrogen and hydrogenic	
		atoms according to quantum mechanics	<b>54</b>
	Sec. 3	3. Displacements of the energy states of hydrogen and hydrogenic	94
	*	atoms according to the perturbation theory of Schrödinger.	62
	Sec. 4	Intensities and polarization of Stark components of hydrogen	02
		and hydrogenic atoms	74
	Sec. 5	Stark effect of the fine-structure components and fine-structure	<i>1</i> . <del>1</del>
	200.	of the Stark components of hydrogen and hydrogenic atoms.	95
	Sec. 6	Theory of the Stark effect for non-hydrogenic elements	111
		Stark effect of the hyperfine structure components of atoms	123
		3. Theory of the Stark effect for the hydrogen molecule	$\frac{123}{126}$
		Theory of the Stark effect for the rotational energy states of	120
		rigid linear molecules	129
			440

Sec. 10. Theory of the Stark effect for the rotational energy states of rigid symmetric top molecules without nuclear quadrupole	104
coupling	134
Sec. 11. Theory of the Stark effect for the rotational energy states of rigid symmetric top molecules with nuclear quadrupole coupl-	
ing	137
Sec. 12. Theory of the Stark effect for the rotational energy states of	101
rigid asymmetric top molecules without nuclear quadrupole	
coupling	143
Sec. 13. Atoms and molecules in rapidly varying fields	
	_
CHAPTER III. General features of the electric effect	
Sec. 1. Deforming influence of external electric fields upon the system	
of atomic energy states	147
Sec. 2. Dependence of displacements of energy levels upon the field	
	150
Sec. 3. Splitting of spectral lines into polarized components	155
Sec. 4. Crossing of atomic energy levels	161
Sec. 5. Appearance of combination lines	164
CHAPTER IV. The electric effect for individual atoms	
Sec. 1. Hydrogen	168
Sec. 2. Helium II	
Sec. 3. Lithium I	218
	224
Sec. 5. Nitrogen V	
Sec. 6. Sodium I	
Sec. 7. Magnesium II	
Sec. 8. Potassium I	
Sec. 9. Rubidium I	
DOC. TO. COODIUM I I I I I I I I I I I I I I I I I I	237
Sec. 11. Chromium I	
Sec. 12. Copper I	
Sec. 13. Silver I	
Doc. 11. Gold 1	254
DOC. IO. LIGHT.	255
DOC. IV. CODWIC I	258
Sec. 17. Helium I	
Sec. 18. Magnesium I	
Sec. 19. Calcium I	
Sec. 20. Strontium I	
Doc. 21. Danuar I	299
DCC. 22. INICROIT	301
Sec. 23. Zinc I	305

G 04 G 1 · T	12A 0.001
Sec. 24. Cadmium I	307
Sec. 25. Mercury I	309
Sec. 26. Samarium I	320
Sec. 27. Europium I	<b>32</b> 0
Sec. 28. Lathanum I	320
Sec. 29. Carbon II	320
Sec. 30. Aluminium I	321
Sec. 31. Indium I	324
Sec. 32. Thallium I	325
Sec. 33. Carbon I	325
Sec. 34. Silicon I	326
Sec. 35. Germanium I	327
Sec. 36. Tin I	328
Sec. 37. Nitrogen I	328
Sec. 38. Oxygen II	329
Sec. 39. Oxygen I	329
Sec. 40. Sulphur I	333
Sec. 41. Fluorine I	339
Sec. 42. Neon II	342
Sec. 43. Chlorine I	
Sec. 44. Argon II	
Sec. 45. Bromine I	
Sec. 46. Iodine I	350
Sec. 47. Neon I	350
Sec. 48. Argon I	361
Sec. 49. Krypton I	367
Sec. 50. Xenon I	373
Sec. 51. Yttrium I	
Sec. 52. Molybdenum I	
CHAPTER V. The electric effect on individual molecules	
Sec. 1. Diatomic homonuclear molecules	381
1.1. Hydrogen ${}^{1}\mathrm{H}_{2}$	382
1.2. Deuterium $D_2$	392
Sec. 2. Polar diatomic molecules	392
2.1. Diatomic hydrides	392
2.1. Diatomic hydraes	395
2.2. Diatomic halides	ES ES
Sec. 3. Triatomic linear molecules	399
Sec. 4. Symmetric top molecules	402
Sec. 5. Asymmetric top molecules	406
CHAPTER VI. Applications of the electric effect	414
References	400
References	<b>420</b>