

MPS '18



**INTERNATIONAL CONFERENCE
ON MANY PARTICLE SPECTROSCOPY
OF ATOMS, MOLECULES, CLUSTERS
AND SURFACES**



**BUDAPEST, HUNGARY
21-24 AUGUST 2018**

**PROGRAMME AND
BOOK OF ABSTRACTS**

**International Conference on Many Particle Spectroscopy of
Atoms, Molecules, Clusters and Surfaces**

Budapest, Hungary

21-24 August 2018



**Programme
and
Book of Abstracts**

Local Organizing Committee

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Conference Issue

Papers submitted to the conference will be published following the conference in a Topical Issue (Many Particle Spectroscopy of Atoms, Molecules, Clusters and Surfaces) of EPJD: Atomic, Molecular, Optical and Plasma Physics.
Guest Editors: K. Tókési, B. Paripás, G. Pszota, and A V Solov'yov

Programme and Book of Abstracts

This book contains the programme of the International Conference on Many Particle Spectroscopy of Atoms, Molecules, Clusters and Surfaces held from 21-24 August 2018 in Budapest. Hungary and

the camera-ready copies of the abstracts as sent by the authors. In few cases only minor corrections were made.

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High resolution study of the autoionizing states of He in their exchange interference energy region

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The electron impact excitation (and their decay into the same final ionic state) of the autoionizing states of helium ($2s^2(^1S)$, $2s2p(^3P)$, $2p^2(^1D)$ and $2s2p(^1P)$) have been studied. The interference of these states can occur when the energies of the autoionizing electrons match that of the scattered electrons. For example at 93.15eV critical primary energy scattered-ejected electron pairs from the 1S and the 1D resonances are indistinguishable. So the same final state is created by different processes, which hereby can interfere [1].

The observation of this exchange interference is disturbed by the Fano interference (the interference between the direct and indirect ionization), which occurs at all primary energies. We intend to study it separately in the neighbourhood of the critical energy, and then to estimate its measure for the critical energy. Our measurements were made at 88eV and 97eV primary energies (where the groups of the ejected and the scattered electron peaks are well separated), at 130° , 90° and 50° scattering angles. The measured spectra were evaluated by a computer code, using the Shore parametrization [2].

We found that the quality of the fit is nearly perfect for the majority of experimental spectra. In some cases, however, we found some systematic deviances (a definite structure can be recognised in the residual spectrum). We found that the intensity independent peak parameters of the spectra measured in the backward direction are affected by much smaller error, obviously because of the relatively smaller background. The data obtained at 88 eV and 97 eV agree each other perfectly at 90° , and they agree well at 130° .

The Lorentz width of the $2s^2(^1S)$ peak is found to be angle-dependent. The angle

dependence is significant, it greatly exceeds the statistical error. The fitted Lorentz width is in a tight relationship with the extent of the Fano interference as well. Out of the strongly asymmetric peaks, the fitting associates relatively smaller Lorentz width to those where the destructive interference is on the high energy side (where there is an overlapping peak too). We think that this effect cannot be caused by PCI or instrumental effects, instead it is caused by a kind of interference between the partly overlapping autoionizing states.

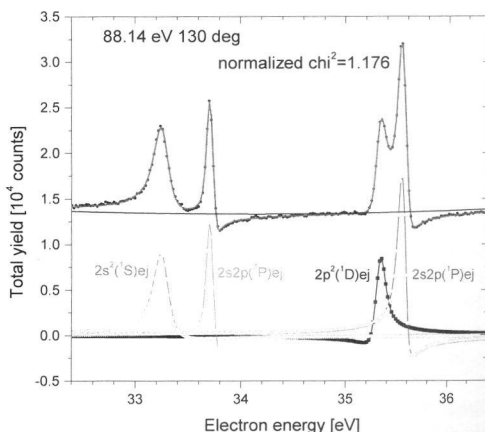


Figure 1. The electron spectrum measured at 130° ejection angle at 88.14 eV primary energy with the best computer fit (solid line). At the bottom the spectrum components are shown.

References

- [1] J.P.V. den Brink, J. van Eck, H.G.M. Heideman, Phys. Rev. Lett. 61 (1988) 2106.
- [2] B. Paripás, J.J. Jureta, B. Palásthy, B.P. Marinković, G. Pszota, J. Electr. Spectr. Rel. Phen (2018), <https://doi.org/10.1016/j.elspec.2018.01.007A..>

August 22, 2018 Wednesday		August 23, 2018 Thursday		August 24, 2018 Friday	
Femto-, attosecond physics (Chair: Edwin Kukk)		Photoionization II. (Chair: Shaofeng Zhang)		Electron collisions (Chair: Alexander Dorn)	
8:40 – 9:00	<i>Opening Norbert Kroó</i>	9:00 – 9:30	<i>Nicolas Sisourat</i>	9:00 – 9:30	<i>Jelena Maljković</i>
9:00 – 9:30	<i>Fernando Martin</i>	9:30 – 9:50	<i>Eliezer Kolodney</i>	9:30 – 10:00	<i>Zehra N. Ozer</i>
9:30 – 10:00	<i>Nora Berrah</i>	9:50 – 10:10	<i>Yuki Orimo</i>	10:00 – 10:30	<i>Matthieu Genevriez</i>
10:00 – 10:30	<i>Florian Trinter</i>	10:10 – 10:30	<i>Stepan Balybin</i>		
10:30 – 11:00	Coffee Break	10:30 – 11:00	Coffee Break	10:30 – 11:00	Coffee Break
Photoionization I. (Chair: Emma Sokell)		Interactions with molecules I. (Chair: Lorenzo Avaldi)		Coll. with molecular syst. (Chair: Stephan Fritzsche)	
11:00 – 11:30	<i>Liang-You Peng</i>	11:00 – 11:30	<i>Da Bo</i>	11:00 – 11:30	<i>Noboru Watanabe</i>
11:30 – 11:50	<i>Maria-Novella Piancastelli</i>	11:30 – 11:50	<i>Victor Despre</i>	11:30 – 11:50	<i>Vishant Kumar</i>
11:50 – 12:10	<i>Stephan Fritzsche</i>	11:50 – 12:10	<i>Moustafa Zmerli</i>	11:50 – 12:10	<i>Zoltán Jurek</i>
12:10 – 12:30	<i>Francis Penent</i>	12:10 – 12:30	<i>Raimund Feifel</i>	12:10 – 12:30	<i>Isabella Floss</i>
12:30 – 14:00	Lunch	12:30 – 14:00	Lunch	12:30 – 14:00	Lunch
Laser field I. (Chair: Nora Berrah)		Interactions with molecules II. (Chair: Sebastian Otranto)		Heavy particle collisions (Chairs: Nicolas Sisourat/ Nikolay Shvetsov-Shilovski)	
14:00 – 14:30	<i>Elena V. Gryzlova</i>	14:00 – 14:30	<i>Miriam Weller</i>	14:00 – 14:30	<i>Ilkhom Abdurakhmanov</i>
14:30 – 15:00	<i>Diego G. Arbó</i>	14:30 – 15:00	<i>Kilian Fehre</i>	14:30 – 14:50	<i>Richard A. Wilhelm</i>
15:00 – 15:20	<i>Ph. V. Demekhin</i>	15:00 – 15:20	<i>Moh. F. Gharaibeh</i>	14:50 – 15:10	<i>Luca Repetto</i>
15:20 – 15:40	<i>Imre Barna</i>	15:20 – 15:40	<i>Nikolay Shvetsov-Shilovski</i>	15:10 – 15:30	<i>Alisher Kadyrov</i>
15:40 – 16:10	Coffee Break	15:40 – 16:10	Coffee Break	15:30 – 15:50	<i>Őrs Asztalos</i>
				15:50 – 16:10	<i>Sebastian Otranto</i>
Laser field II. (Chair: Alisher Kadyrov)		More complex systems (Chair: Piero Decleva)		16:10 – 16:30	Final remarks
16:10 – 16:40	<i>Akiyoshi Hishikawa</i>	16:10 – 16:40	<i>Péter Dombi</i>	16:30	End of the conference
16:40 – 17:10	<i>Nicolas Camus</i>	16:40 – 17:00	<i>Hicham Agueny</i>		
17:10 – 18:30	Poster session	17:00 – 18:30	Poster session		
		19:30	Conference dinner		