

Πώς
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των ατόμων;



Fig. 3 Members of the Frankfurt Physics faculty in 1920. From right: sitting Otto Stern, unknown, Max Born, Hedi Born and Richard Wachsmuth, standing: 3rd from right Alfred Landé, 4th Walther Gerlach, and next to Gerlach probably Elizabeth Bormann [3]

Πείραμα μοριακής δέσμης του Otto Stern

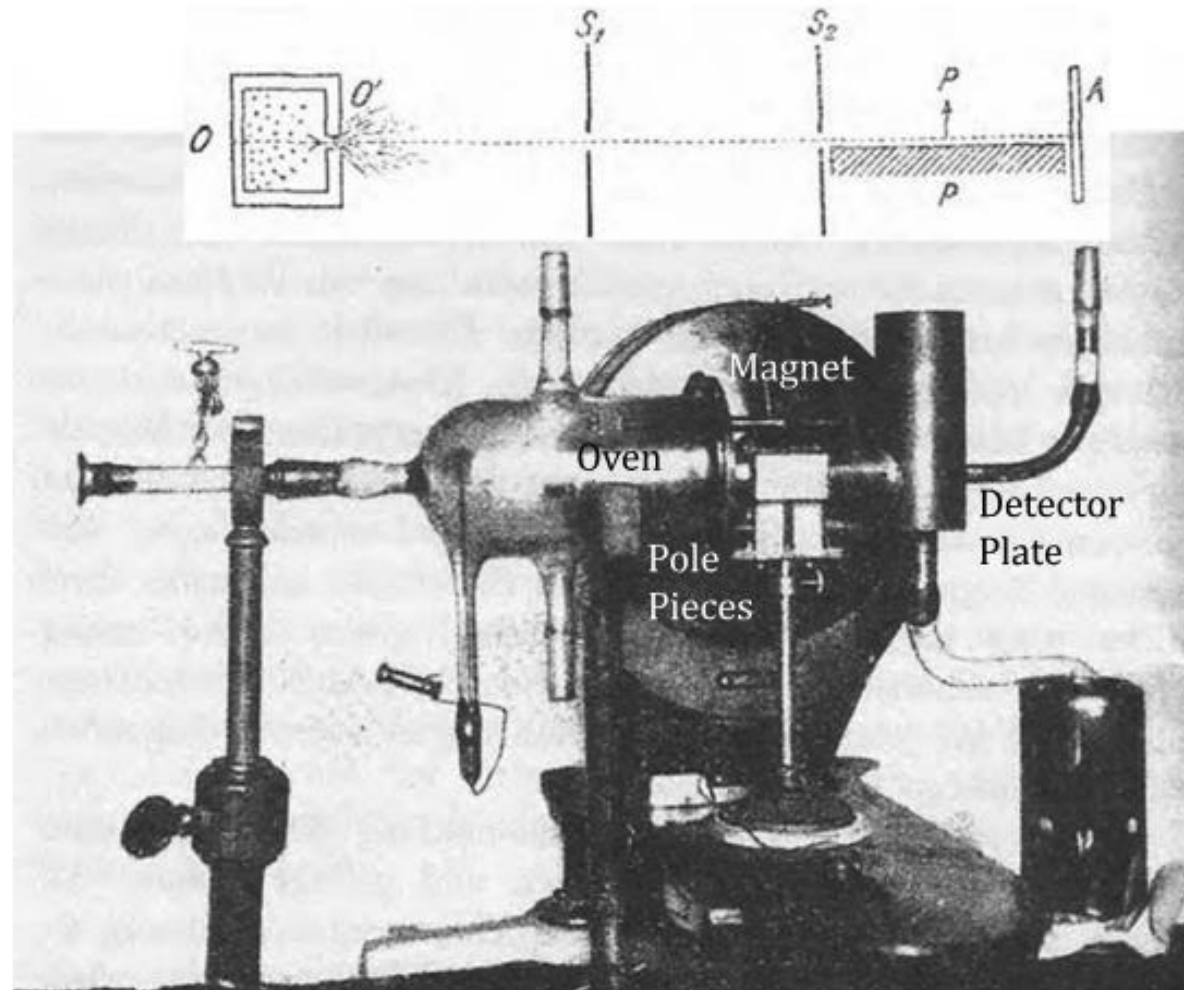
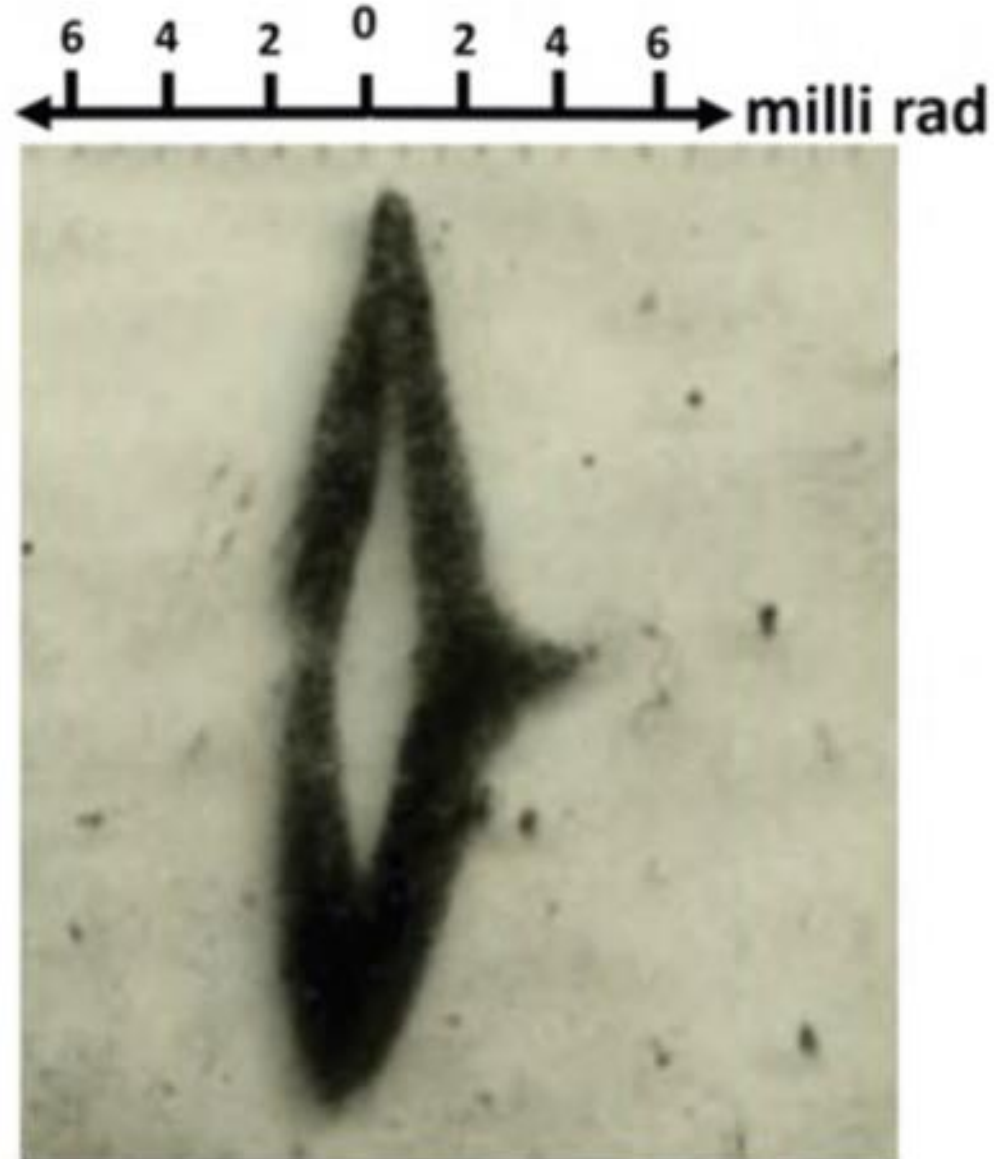
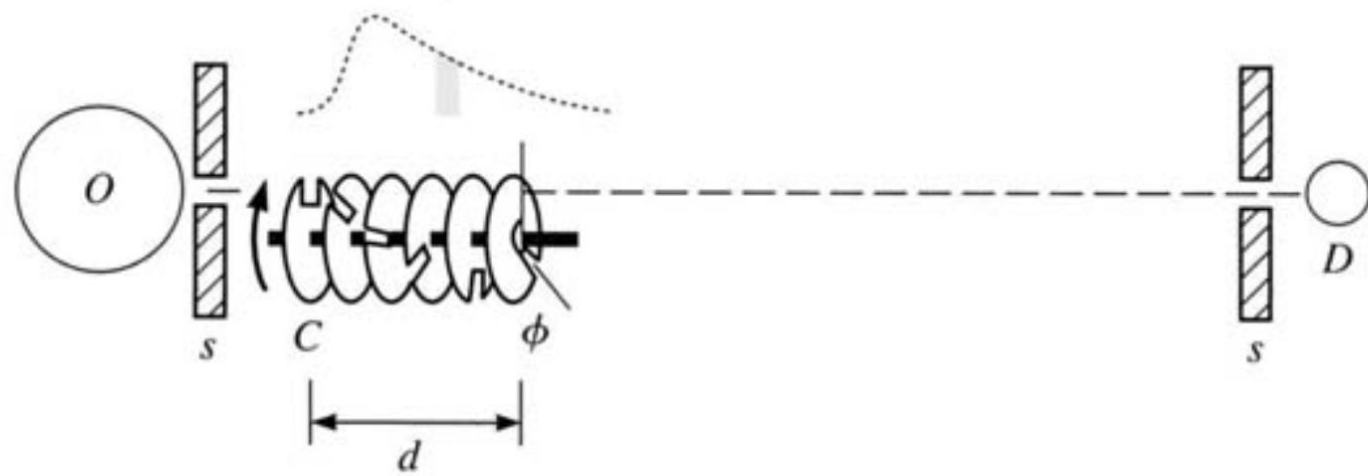


Fig. 6 The Stern-Gerlach apparatus of 1922, with improvements of 1924 and 1925. The schematic in the inset shows the silver beam effusing from an oven (O) and passing through a pinhole (S_1) and a rectangular slit (S_2) before entering the magnetic field (whose direction is indicated by the arrow) between the pole pieces (P) and finally reaching the detector plate (A) (Gerlach and Stern 1924; Gerlach 1925)

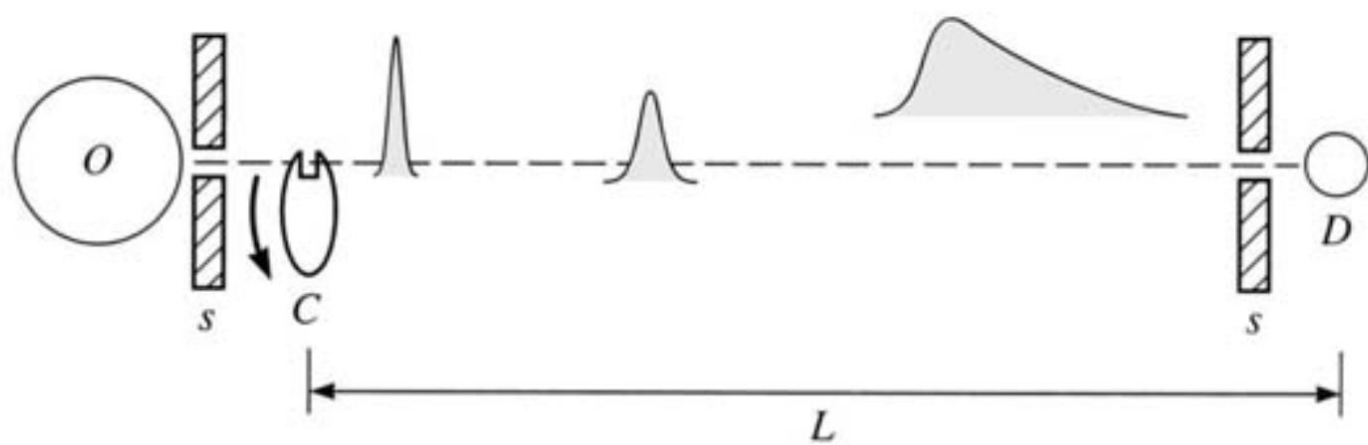
Πείραμα μοριακής δέσμης του Otto Stern

Fig. 10 The SGE result plotted in scattering angles (milli rad). Otto Stern's private slide collection. Senckenberg Bibliothek der Universität Frankfurt, Johann Wolfgang Goethe-Universität Frankfurt am Main, 60325 Frankfurt. Calculation of the deflection angles by Horst Schmidt-Böcking

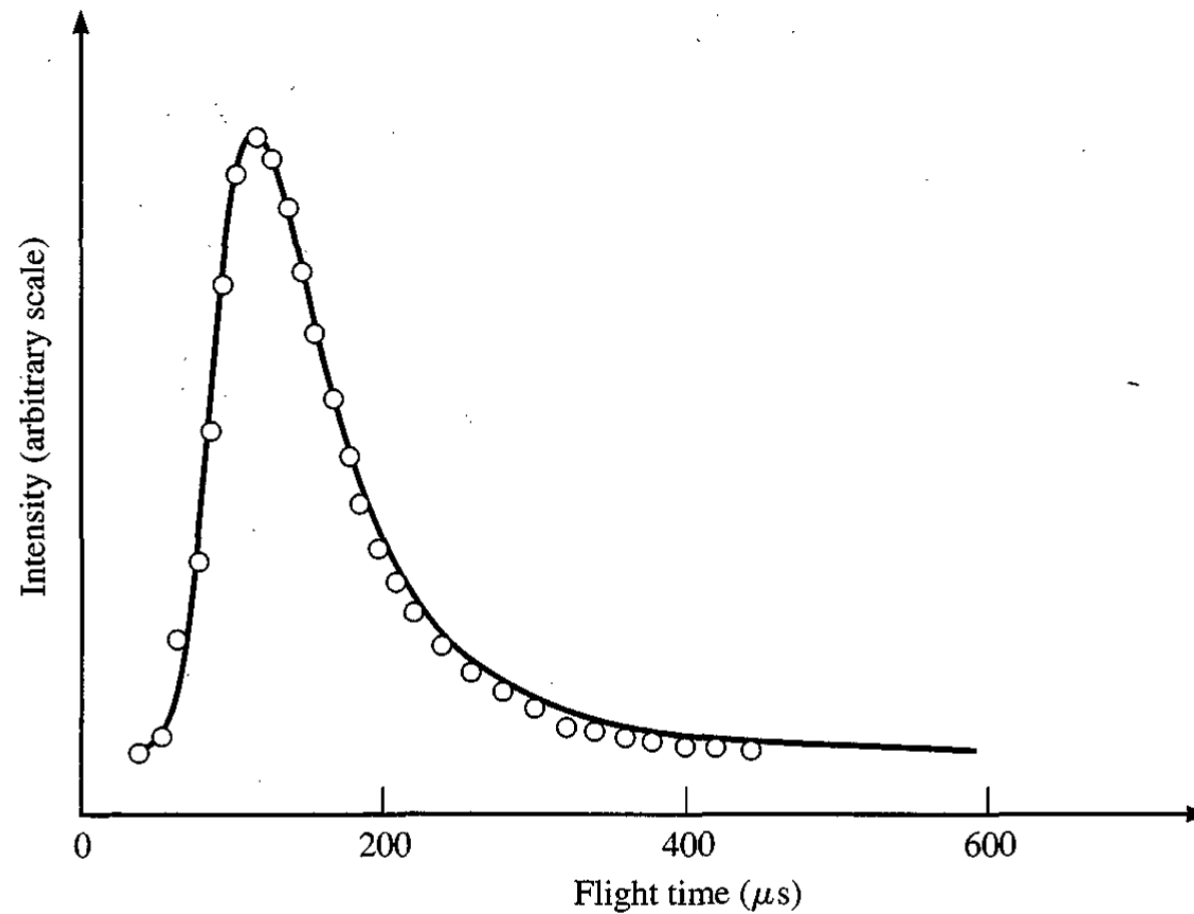




(A)



(B)



■ **Figure 1.8**

Time-of-flight measurements: intensity as a function of flight time.

From J. F. C. Wang and H. Y. Wachman, as illustrated in F. O. Goodman and H. Y. Wachman, *Dynamics of Gas-Surface Scattering* (Academic Press, New York, 1976). Figure from "Molecular Beams" in DYNAMICS OF GAS-SURFACE SCATTERING by F. O. Goodman and H. Y. Wachmann, copyright © 1976 by Academic Press, reproduced by permission of the publisher. All rights or reproduction in any form reserved.



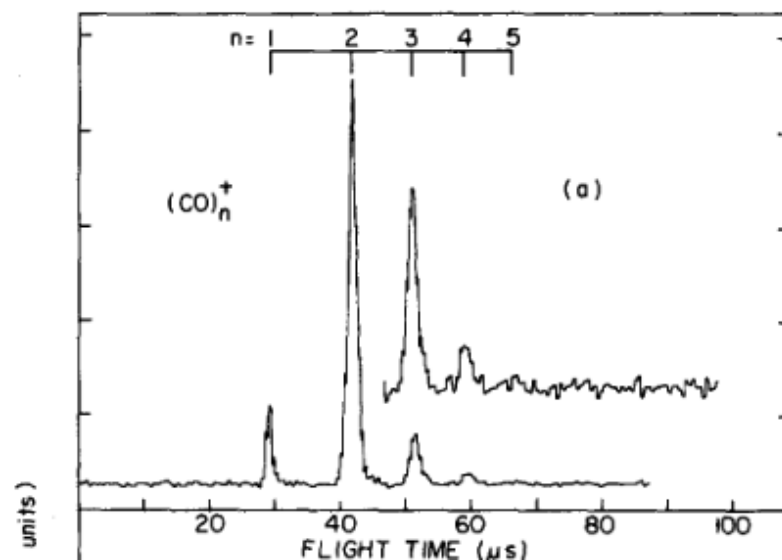
A photoion-photoelectron coincidence study of $(\text{CO})_2$

K. Norwood, J.-H. Guo, G. Luo, and C. Y. Ng^{a)}

Ames Laboratory, U.S. Department of Energy^{b)} and Department of Chemistry, Iowa State University, Ames, Iowa 50011

(Received 19 November 1987; accepted 13 January 1988)

Molecular beam photoionization¹ and equilibrium² mass spectrometric measurements have provided valuable energetic information about dimer and cluster ions in their ground state. In spite of the recent intense research activities³⁻⁹ in cluster ion chemistry, little is known about the interaction energies of an excited state ion with neutral molecules. A systematic method for determining the binding energies of a ground state as well as an excited state ion with neutral species is to measure the adiabatic ionization energies (IE) of the appropriate clusters by photoelectron spectroscopic techniques. The photoion-photoelectron coincidence (PIPECO) technique,¹⁰⁻¹⁴ which utilizes the flight time correlation of an ion-electron pair, is most promising



26.25. Στη μελέτη των καταλυτικών ιδιοτήτων μιας επιφάνειας τιτανίου ήταν αναγκαίο η επιφάνεια να διατηρείται καθαρή από προσμείξεις. Υπολογίστε τη συχνότητα κρούσεων ανά cm^2 επιφάνειας που γίνονται από το οξυγόνο σε πίεση (α) 1 atm, (β) 10^6 atm, (γ) 10^{-10} atm και θερμοκρασία 300 K. Εκτιμήστε τον αριθμό κρούσεων που γίνονται με ένα άτομο της επιφάνειας ανά δευτερόλεπτο. Αυτό υπογραμμίζει τη σημασία της ύπαρξης πολύ χαμηλών πιέσεων για τη μελέτη των ιδιοτήτων καθαρών επιφανειών. Θεωρήστε την απόσταση των πλησιέστερων γειτονικών ατόμων ίση με 291 pm.