

## The First “Non-Government” Visiting-Scholar Delegation in the United States of America from People’s Republic of China, 1979-1981

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In February, 1979, a delegation of eight scientists from the Institute of Physics, Chinese Academy of Sciences, arrived in Evanston, and became the first group of “non-government” visiting scholars ever set foot in the USA since 1949. This group consists of Qian Yongjia (钱永嘉), LI Tiecheng (李铁成), ZHENG Jiaqi (郑家祺), SHEN Juelian (沈觉涟), WANG Dingsheng (王鼎盛), CHENG Bingying (程丙英), GU Shijie (顾世杰) and LIN Lei (林磊, Lui LAM). Lin stayed for three months while the rest of the group stayed for two years. The work by Lin at Northwestern University was later published in *Physical Review Letters*, the most prestige physics journal in the world, and became the first paper ever published in this journal by an author from China. Here, the background of the domestic situation in China and the international relationship between China and USA leading to the visit are summarized. The formation of this delegation of visiting scholars is described, followed by the 1979 visit itself. Lastly, the influence of the visit on the careers of the delegates afterwards and on the Chinese reform-opening up movement in general is given.

**Key words:** Institute of Physics, Reform-Opening Up Movement, visiting scholars in USA, Baodiao Movement, Haigui, Physical Review Letters

### I. Introduction

People’s Republic of China was founded in 1949. After a series of political movements, the country embarked on the road of “reform and opening up” in 1978. It is at this early period, in February of 1979, that a delegation of eight scholars from the Institute of Physics, Chinese Academy of Sciences, was invited to visit and work in the United States. Most of them stayed for two years; six were funded by their USA hosts during their stay—the first group of visiting scholars<sup>1</sup> from China ever receiving this treatment. In other words, they were treated as equals as physicists by their hosts, at Northwestern University, Evanston,

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<sup>1</sup> This term was coined by Chia-Wei Woo in Oct., 1979 because the visiting Chinese scientists did not have professional titles such as professor or doctoral degrees, so the usual titles of visiting professors or postdocs could not be used. (Chia-Wei Woo, interview in Hong Kong, Mar. 24, 2009; see also [Woo, 2007, p. 36].)

II.

This article is written by one of the eight, telling the story for the first time by reviewing the background, the 1979 visit itself and the aftereffect of this historical event.

## II. Historical Background

Table 1. Timeline of events related to the visit.

Institute of Applied Physics, CAS, established Yan Jici, Director	1950	
Shi Yuwei, Director	1957	
Changed name to Inst. of Phys. (moved to ZGC)	1958	
	1971	Pingpong diplomacy
	1972	Nixon visited China
	1976	Hua Guofeng succeeded Mao as chairman of CCP
	1977	May, Deng Xiaoping resumed working
Jan., Lam came to IoP	1978	
		March, National Science Meeting
Aug.-Dec., Chia-Wei Woo visited IoP		
		Dec., Third Central Committee of CCP Meeting
	1979	Jan. 1, China and USA established diplomatic relationship
		Jan. 29-Feb.4, Deng Xiaoping visited USA
Feb. 9, IoP delegates left Beijing, starting the journey to Northwestern Univ., USA		
Feb. 15, arriving Northwestern Univ.		
June, Lam returned to Beijing via Hong Kong		
Rest of IoP delegates returned to Beijing	1981	
Guan Weiyan, Director		

### 1. A Brief History of the Institute of Physics

In 1928, during the Republic of China period, the Institute of Physics of the National Academia Sinica (国立中央研究所) was established in Shanghai. Next year, an Institute of Physics under the National Academia Beiping (国立北平研究所) was established in Beiping (Beijing today). In 1948, part of the former institute moved from Shanghai to Nanjing.

Soon after the establishment of the People's Republic of China in 1949, the Academia Sinica (中国科学院, called Chinese Academy of Sciences, or CAS, today) was established in Beijing, the capital. Next year, the two institutes were combined to form the Institute of Applied Physics, with Yan Jici (严济慈) (1900-1996) as the Director. Shi Yuwei (施汝为) (1901-1983) became the new director in 1957. The institute changed name to Institute of Physics (IoP) and moved to Zhongguancun, the present address, in

1958. In 1981, Shi stepped down (and passed away in 1983), and Guan Weiyan (管惟炎)<sup>2</sup> succeeded as director. A detailed history of the IoP can be found in [Zhao et al., 2008].

## **2. *The China-USA Interaction and Chinese Politics, 1971-1979***

Various political movements planned by the government appeared after 1949. In particular, the Great Cultural Revolution lasted from 1965 to 1975, officially speaking. The political interests of China and the USA, in regard to USSR, overlapped partially in the early 1970s, resulting in the visit of the American ping-pong team in China in 1971 even though there was no diplomatic relationship between the two countries. The next year, President Nixon visited China.

Chairman Mao Zedong (毛泽东) died in 1976 and was succeeded by Hua Guofeng (华国锋) immediately. Deng Xiaoping (邓小平) resumed working in May, 1977. In March 1978, the National Science Meeting was held in Beijing, in which Deng gave the speech that recognized intellectuals as part of the working class and science as the first production force [Luo, 2008]. In December of the same year, the most important Third Central Committee Meeting of the Chinese Communist Party was held in Beijing, which officially shifted the focus of government work from class struggle to economic developments. This meeting is regarded as the beginning of the reform-opening up period of the last 30 years in China's development [Tang, 1998].

A few days after this meeting, on January 1, 1979, China and USA established formal diplomatic relationship. Between January 29 to February 4, 1979, Deng visited the United States.

## **3. *The History of Chinese Students Going Aboard and Returned Since 1872***

Before 1949, there are eight generations of Chinese students *going aboard* to study, by the Western Returned Scholars Association's counting.<sup>3</sup>

1. First generation (1872-1875): The Qing Dynasty government sent out 120 children, aged 12-15, to the USA to study [including the famous Rong Hong (容宏)].
2. Second generation (1877): Nearly 100 navy students sent to Europe in early years of Kuangxu.
3. Third generation: Students going to Japan in the early 20<sup>th</sup> century.
4. Fourth generation: Students going to the USA under the auspices of the Boxer Indemnity.
5. Fifth generation: Students going to France to study and work [including Zhou Enlai (周恩来), Deng Xiaoping,...].
6. Sixth generation: Students going to USSR during the 1920s.
7. Seventh generation (1927-1937): Students going aboard (including Yan Jici, Shi Yuwei,...).
8. Eighth generation (1938-1948): Students going to Europe and USA (including Yang Chen-Ning, Lee Tsung-Dao, ...).

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<sup>2</sup> Quan Weiyan, born Aug. 18, 1928 and died Mar. 20, 2003 (in Taiwan), studied low temperature physics in the 1950s in USSR and returned to China in 1960. He was the president of the University of Science and Technology of China, after serving as the director of the IoP, and was an academician of CAS (since 1980).

<sup>3</sup> [www.coesa.cn/info/categorymore.shtml?Cid=C01](http://www.coesa.cn/info/categorymore.shtml?Cid=C01) (Mar. 20, 2009).

Continuing with this counting, after 1949, we have three more generations of Chinese students going aboard, namely:

9. Ninth generation (1949-now): Large number of students from Taiwan and Hong Kong, and a few from Macau, went to USA and Europe (including the three Nobelists: Li Yuenjie from Taiwan, Tsui Qi and Gao Kun from Hong Kong).
10. Tenth generation (1950s): Students going to USSR sent by the Chinese government (including Guan Weiyuan,...).
11. Eleventh generation (1978-now): Students from mainland China, going to USA, Europe, etc., sent officially or going privately [Cao, 2009].

The history of students *returning* to China to reside and work is equally interesting. Before 1949, a large number of these students willingly returned to China during the Japanese invasion and contributing to the modernization of their motherland. After 1949, there are three generations returning to mainland China *voluntarily*, called *haigui* (meaning “returning from overseas”) by today’s jargon:

1. First generation (early 1950s): Those coming back mainly from USA and Europe, soon after People’s Republic of China was established [including Qian Xuesen (钱学森) ...].
2. Second generation (mostly 1975-1985): Near 100 students of the 9<sup>th</sup> generation returned to China, the majority of them after the Cultural Revolution.
3. Third generation (after 1980): These are the 11<sup>th</sup> generation students returning when the reform-opening up process in China is picking up speed.

### **III. The Visiting-Scholar Delegation**

#### **1. *Lam Returned to China to Work in January, 1978***

I was born in Guangdong province and grew up in Hong Kong, where I received my education from grade one on and graduated from the University of Hong Kong with a B.Sc. degree, spanning from 1949 to 1965. I then went aboard to Vancouver, Canada, in 1965 and then to New York City in 1966. I received my M.Sc. degree from the University of British Columbia and Ph.D. from Columbia University (1973), both in physics. I therefore belong to the 9<sup>th</sup> generation of Chinese students going aboard.

It was during my graduate student years that the anti-Vietnam War movement erupted and the students took over the buildings at Columbia University. Chinese overseas students, though present, were mostly outsiders in all these activities.

All these changed suddenly at end of 1970. In that year, after large quantities of potential oil deposits near the group of tiny islands called Tiaoyudao (called Tiaoyutai in Taiwan) were announced by foreign oil companies, both Japan and China reiterated their ownership of Tiaoyudao, which, formally speaking, is under the jurisdiction of the Taiwan government. To help keep Tiaoyudao under China, overseas Chinese students in USA started the “Protect Tiaoyutai” movement in December, 1970 [The Seventies Monthly, 1971]; the first big meeting was held in the basement of the Teachers College, Columbia University,

December, 1970. Many oversea Chinese, students or otherwise, worldwide were mobilized.<sup>4</sup>

I was a physics graduate student at Columbia University when the Protect Diaoyudao Movement started. I actively participated at the first meeting held at Columbia in Dec. 1970 and subsequent events, including the march in Washington, D.C. and the conference in Ann Arbor, both in 1971. But since I can speak Cantonese, the major language used in Chinatown in New York City, I chose to go and live in Chinatown for about two years, to "live and learn from the masses" as what was the fashion in China during those Cultural Revolution years. We did earn the trust of the Chinatown masses by living among them and serving their needs, such as selling them vegetables and eggs at wholesale prices which were lower than that in the market. However, in order to concentrate on my thesis research (which I had suspended doing while living in Chinatown) I moved back to live near the Columbia campus. I found an idea to solve the physics problem at hand one day, quite unexpectedly, and finished my thesis quickly.

Before I earned my Ph.D. (in 1973, formally speaking) I had applied to the Chinese representative to UN office in New York City, asking for permission to come back to China, to serve the country and the people. We were asked to wait because China was not ready to accept us back then. In 1975, my job took me to Europe, first in Belgium and then in West Germany. I kept contact with the embassies there, and eventually, in September 1977 after Chair Mao passed away, I was invited by the embassy to come to China, to participate in the October 1 National day celebration. It was in Beijing that I was informed that my application to return to China was finally granted, and I was assigned to work at the Chinese Academy of Sciences.

Early January, 1978, I, together with my wife and my eight-month old daughter, arrived in Beijing through Hong Kong. And I started to work at the Institute of Physics, CAS [Li, 2003]. In other words, I was a member of the 2<sup>nd</sup> generation of haigui; in fact, I was the first haigui to return to work at CAS after the Cultural Revolution. I was quite welcome by the official press.

## ***2. Formation of the Delegation***

In my first year at IoP, Chia-Wei Woo (吴家玮, Fig. 1) from the Northwestern University, USA, came to our institute as a guest professor in mid-August, staying for about three months. During his stay, he invited the IoP to send a delegation of physicists to go to his department to work as visiting scholars; everything paid by his university once we arrived there.<sup>5</sup> This proposal was very generous, and was approved by the highest level in China, presumably by Hua Guofeng himself.<sup>6</sup> (After leaving IoP early December, Woo went to Fudan University as a guest professor for one month.) Woo did his high school in Hong Kong, went to USA in 1955 and obtained his Ph.D. there; he was the chair of his physics department when he visited us. He, like me, belongs to the 9<sup>th</sup> generation of Chinese students going aboard.

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<sup>4</sup> <http://archives.lib.nthu.edu.tw/exhibition/diaoyun/> (April 27, 2009)

<sup>5</sup> As it worked out, six of these scholars were supported by Northwestern; LI Tiecheng and CHENG Bingying were funded by CAS (at least for the first year). According to Woo (interview in Hong Kong, Mar. 24, 2009), he used the unused part of the Northwestern money to invite two visiting scholars from Fudan University.

<sup>6</sup> Wang Dingsheng, interview in Beijing, July 7, 2005.



Fig. 1. Chia-Wei Woo.

The IoP at that time was effectively run by Guan Weiyan, the deputy director, due to the old age of the director, Shi Yuwei. The IoP picked eight members to form the delegation.<sup>7</sup> The members are: QIAN Yongjia (钱永嘉), LI Tiecheng (李铁成), ZHENG Jiaqi (郑家祺), SHEN Juelien (沈觉涟), WANG Dingsheng (王鼎盛), CHENG Bingying (程丙英), GU Shijie (顾世杰) and LIN Lei (林磊). (See Fig. 2.)

The youngest one was Cheng Bingying; he was a worker-peasant-soldier graduate of Fudan University, Shanghai. Wang Dingsheng studied physics in Peking University (1956-1962) and was a graduate student at IoP (1962-1966); he started working at IoP in 1967. Qian Yongjia, a graduate of Fudan, was the head of the delegation; he was a minor leader in IoP during the Cultural Revolution years [Li, 2004, p. 241]. Some of the delegates were already publishing papers; some examples:

- Li Yinyuan (李荫远), Fang Lizhi (方励之) and Gu Shijie (顾世杰) [1963] “Influence of ferromagnetic defects on spin waves,” *Wuli Xuebao*, 599-612.
- Gu Shijie (顾世杰) (translator) [1974] *Diffraction: Interference in Optics*, by M. Francon (Science Press, Beijing).
- Shen Juelian (沈觉涟) [1966] “Second order phase transformation of magnetic crystals and magnetic structure of metals of the Lanthanum series,” *Acta Physica Sinica* **22**, 94-110
- Shen Juelian (沈觉涟) [1978] “On the theory of second order phase transitions and an exposition on the non-validity of Lifshitz condition,” *Acta Physica Sinica* **27**, 63-84
- Wang Dingsheng (王鼎盛) and Pu Fucho (蒲富恪) [1964] “Spin wave spectrum and excitation in finite ferro-antiferromagnetic linear chain,” *Acta Physica Sinica* **20**, 1067-1078.
- Wang Dingsheng (王鼎盛), Chen Guanmian (陈冠冕) and S. T. Pan (潘孝硕) [1973], “Frequency dependence of domain wall creeping in magnetic films,” *Wuli (Physics)* **2**, 169-182.
- Lai Wuyan (赖武彦), Wang Dingsheng (王鼎盛) and Pu Fucho (蒲富恪) [1977], “Dipole-exchange spin waves in a cylindrical ferromagnet,” *Acta Physica Sinica* **26**, 285-291.

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<sup>7</sup> I actually volunteered myself, asking to stay for only three months in the USA.



Fig. 2. The delegates with Chia-Wei Woo in front of the Field Museum of Natural History, Chicago. From left to right: Woo, Shen Juelian, Lin Lei, Zheng Jiaqi, Gu Shijie, Qian Yongjia, Cheng Bingying, Li Tiecheng and Wang Dingsheng. The visit to the Field Museum was on Feb. 15, 1979, arranged by Northwestern University soon after their arrival in Chicago, and was aired by CBS in its weekly highlight TV program “60 Minutes” on Sunday evening, Mar. 18, 1979.

#### IV. The 1979 Trip and Stay in USA

##### 1. The 1979 Trip

The delegation left Beijing on Feb. 9, 1979, soon after Deng’s visit to the United States. We flew from Beijing to Paris by CAAC (the only government airline at that time, now reorganized as Air China), and spent an evening in a hotel in the suburb. Upon arriving, I called up my French friend, Roland Ribotta from the Université Paris Sud, and he took several of us for a short sightseeing in Paris.<sup>8</sup> The next day, we took TWA from Paris to New York City. The TWA captain announced a welcome of our delegation to the passengers soon before we landed.

Arriving in New York City on Feb. 11, I suddenly had a good idea. With permission, I spent a few days in New York City and visited my friends in Chinatown there, while the rest of the delegates went on to Washington, D. C. They spent four days there, receiving briefings from the embassy people, and even did some sightseeing. The local patriotic newspaper *China Daily News* (华侨日报) interviewed me.<sup>9</sup> I then flew to Chicago, and joined my fellow delegates in Evanston.

<sup>8</sup> Among the passengers in this small car were Gu Chaohao, the mathematician from Fudan University, and C. N. Yang’s sister. They happened to be in the Paris airport in transit.

<sup>9</sup> I worked as a volunteer in editing this newspaper during my graduate student years.

When our delegation arrived Northwestern University at Evanston on Feb. 15, the first thing that Prof. Woo did was take us to a news conference attended by local newspaper and TV reporters. Of course, that included reporters from the student newspaper. The reception was very warm. All American people were willing and eager to help us, since we came from a China which just pulled herself out of the Cultural Revolution and needed help to rebuild the country. The next thing that Prof. Woo did was take us to a closed room in the canteen and taught us how to use fork, knife and spoon to eat American food. A very essential and helpful lesson.

## 2. *The Stay in USA*

We lived in campus, a few minutes of walking distance from the building in which the physics department was housed. Our daily life involved traveling between two buildings, but on the weekends we did sometimes venture to the Chicago city and did some sightseeing.

I spent three months at Northwestern University, working with Chia-Wei Woo, a theoretical physicist specialized in many-body problems. Shen Juelian and Li Tiecheng did the same. Eventually, after I returned to China, Shen, Woo, Yu Lu<sup>10</sup> and I published a joint paper [Shen *et al.*, 1981]. Wang Dingsheng worked with Arthur Freeman on band-structure calculations. The rest of the delegates worked in experiments with other professors, George Wong (王克倫) and John Ketterson. In the last few weeks during my stay, I went to quite a number of university campuses to give physics seminars, and general talks on my experience in China (sponsored by the Chinese students there). The reception was very enthusiastic.

Woo then moved to University of California, San Diego, as a provost in summer 1979.<sup>11</sup> He took Shen and Li with him there. All the members, except me, stayed for two years in USA.<sup>12</sup>

## V. **Back to China**

I went back to Beijing, via Hong Kong, in June, 1979. In Hong Kong, I was interviewed by the *Wen Wei Po* (文汇报) and was invited to write a popular science article in this newspaper. I wrote up my work on the phase transition of liquid crystals (done at Northwestern) and, with the three diagrams drawn up by my friend, Chapman Wong (黄卓民, Fig. 3),<sup>13</sup> I submitted the paper to *Physical Review Letters* from Hong Kong [Lin, 1979].<sup>14</sup> This paper turned out to be the first one ever by an author from the People's Republic of China, in this top journal in the physics profession (Fig. 4).

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<sup>10</sup> YU Lu was my colleague in the same group at IoP in 1978. He moved to the newly formed Institute of Theoretical Physics, CAS, in 1979, and is now an academician of CAS.

<sup>11</sup> Woo, after four years at UC San Diego, became the president of San Francisco State University in 1983 and, later in 1988, the founding president of Hong Kong University of Science and Technology.

<sup>12</sup> CHEN Guanmian (陈冠冕), a physicist at IoP and wife of Wang Dingsheng, joined her husband at Northwestern in Sept., 1980 and spent a year there working with L. H. Schwartz in the Materials Research Center. After Woo left Northwestern, some of these seven scholars from IoP repeatedly returned to Northwestern for short visits.

<sup>13</sup> Wong, an old friend of mine from Hong Kong, was a technician in the physics department of the Chinese University of Hong Kong at that time. There was no software (like Excel or Origin) to draw diagrams; diagrams had to be drawn carefully and professionally on special papers using Indian ink.

<sup>14</sup> Many years later after I went back to work in the USA, I met Stanley Liu, the then assistant editor of this journal, for the first time in a physics conference. He still remembered this paper.



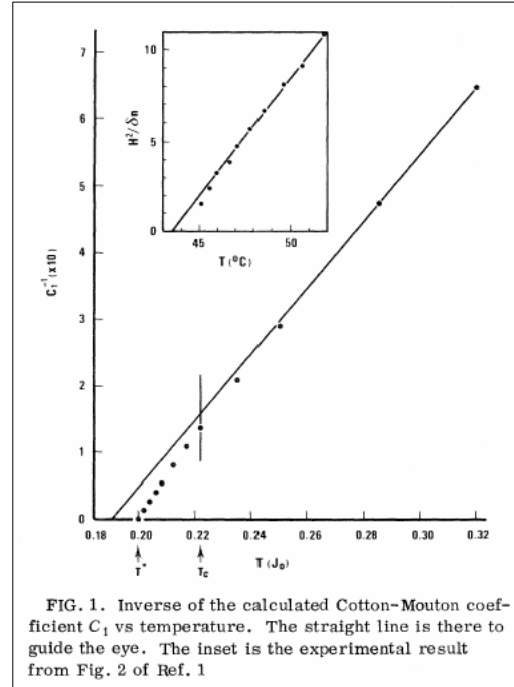


Fig. 3. Chapman Wong (ca. 1970), who drew up the three diagrams in my first paper in *Physical Review Letters* [Lin, 1979]. Figure 1 from this paper is shown on right.

After returning to China in 1981, the other members progressed as physicists over the years. Cheng Bingying became a Ph.D. doctoral advisor at IoP; he passed away due to liver cancer in 1996. Li left IoP later and stayed in Canada, while Gu and his family left China and became residents of USA. Qian moved to Fudan University soon after returning. He and Zheng later worked at the Hong Kong University of Science and Technology; both retired now. Shen stayed on in IoP until he retired at 65. Wang went on to build up an active research group in Beijing; he and his students kept long-term close collaboration with Arthur Freeman and coauthored many papers (see, for example, the paper by Wang et al. below). He became an academician of CAS in 2005, and still works at IoP.<sup>15</sup>

Here are some works by these people after 1981:

- Gu Shijie (顾世杰) (translator) [1987] *Principles of Nonlinear Optics*, by Y. R. Shen (Science Press, Beijing).
- Lu Huibing (吕惠宾), Zhou Yueliang (周岳亮) and Gu Shijie (顾世杰) [1989] “AC power source for pre-ionization gas CW laser” (patent application).
- Qian Yongjia (钱永嘉) (ed.) [1989] *Selected Papers on High  $T_c$  Superconductors Research in Shanghai: 1987-1988* (Fudan University Press, Shanghai).
- Qiu Jingwu (邱经武), Zhang Xianfeng (张先锋), Tang Zhiming (唐志明) and Qian Yongjia (钱永嘉) [1990] “Double-hole RF-SQUID made of high-temperature oxide superconductor,” *Chinese Journal of Low Temperature Physics*, No. 4.

<sup>15</sup> There is no retirement age for academicians in China.

by numerically integrating the dynamical equations. They include the effects of boundaries, which increases the difficulty and may explain part of the complicated motion they report. Still, the mechanism seems clear: The system evolves toward a local minimum of  $\tilde{f}$  at  $\beta=0$  or  $\pi$ ; upon reaching the local minimum,  $\tilde{f}$  changes, with the local minimum now a local maximum. The external source of the heat current provides the energy dissipated by this process.

The preceding analysis, based on helical solutions, cannot be quantitatively correct, for it is likely that the unstable helices develop into more complicated time-dependent states. Nevertheless, we expect the qualitative behavior to confirm our second basic result that an applied parallel magnetic field  $H > H_c$  should induce a marked time-dependent deformation, whose character depends on the nature of the experiment: A persistent current in a torus should lead to a stable wide-angle helix with reversed but diminished supercurrent, whereas heat flow should produce anharmonic but periodic oscillations of the texture.

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<sup>1</sup>P. Bhattacharyya, T.-L. Ho, and N. D. Mermin, *Phys. Rev. Lett.* **39**, 1290, 1691(E) (1977).

<sup>2</sup>A. L. Fetter, *Phys. Rev. Lett.* **40**, 1656 (1978).

<sup>3</sup>H. Kleinert, Y. R. Lin-Liu, and K. Maki, *Phys. Lett.* **70A**, 27 (1979).

<sup>4</sup>J. B. McLaughlin and P. C. Martin, *Phys. Rev. A* **12**, 186 (1975).

<sup>5</sup>C. Normand, Y. Pomeau, M. G. Velarde, *Rev. Mod. Phys.* **49**, 581 (1977).

<sup>6</sup>W. F. Brinkman and M. C. Cross, in *Progress in Low Temperature Physics*, edited by D. J. Brewer (North-Holland, Amsterdam, 1978), Vol. VIII, p. 105.

<sup>7</sup>A. L. Fetter, *Phys. Rev. B* **20**, 303 (1979).

<sup>8</sup>Y. R. Lin-Liu, K. Maki, and D. Vollhardt, *J. Phys. (Paris)*, *Lett.* **39**, 381 (1978), and *Phys. Rev. B* **20**, 159 (1979).

<sup>9</sup>H. Goldstein, *Classical Mechanics* (Addison-Wesley, Palo Alto, 1965), p. 219.

<sup>10</sup>W. M. Saslow and C.-R. Hu, *J. Phys. (Paris)*, *Lett.* **39**, 379 (1978); S. Takagi, *Prog. Theor. Phys.* **60**, 934 (1978).

<sup>11</sup>This situation is analogous to the Eckhaus instability discussed in Ref. 5.

<sup>12</sup>The present dynamical equations are insufficient to calculate the period of the motion because  $\partial f/\partial \beta$  vanishes at  $\beta=0$  or  $\pi$ . The uniform state is thus an unstable equilibrium and fluctuations must be invoked for the system to move away.

<sup>13</sup>J. R. Hook and H. R. Hall, *J. Phys. C* **12**, 783 (1979).

### Nematic-Isotropic Transition in Liquid Crystals

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Correlation functions and the Cotton-Mouton coefficient are calculated for liquid crystals beyond the mean-field approximation. My results in the context of a first-order transition are compared with the recent experiments of Keyes and Shane for N-[*p*-methoxybenzylidene]-*p*-butylaniline (MBBA) connecting with the possible tricritical nature of the nematic-isotropic transition.

Recently, Keyes and Shane<sup>1</sup> measured the gap exponent  $\Delta$  for the nematic-isotropic (N-I) phase transition in N-[*p*-methoxybenzylidene]-*p*-butylaniline (MBBA) in the isotropic phase. They found  $\Delta = 1.26 \pm 0.10$  which is consistent with the tricritical value  $\Delta = 1.25$  but differs from the mean-field prediction  $\Delta = 2$ , giving the impression that the N-I transition is actually tricritical in nature. In this Letter, among other things, we show that by going beyond the mean-field approximation the so-called gap exponent  $\Delta$  is not a constant but in general a function of temperature  $T$ . Depending on the temperature range un-

der consideration, the effective exponent can deviate from the mean-field value and may be equal to 1.59, for example. Therefore, the measurement of  $\Delta$  alone is insufficient in determining the critical or tricritical nature of the N-I transition. In addition, the deviation of the inverse of the Cotton-Mouton coefficient from linearity just above  $T_c$  is explained.

It has been known for some time that the de Gennes-Landau theory<sup>2</sup> is inapplicable near  $T_c$  in the isotropic phase. More recently, contrary to the current belief,<sup>3</sup> Lin and Cai<sup>4</sup> have shown that, quantitatively speaking, the same

Fig. 4. The very first *Physical Review Letters* paper by an author from the People's Republic of China. A Texas Instrument calculator (bought by Lui Lam in Hong Kong just before he went back to work in China in Jan. 1978) was used to do a linear fit in one of the three diagrams in this paper. This weekly journal was created by American Physical Society in 1958 and quite immediately became the top journal in the physics profession worldwide.

- Yuan Songliu (袁松柳), Jin Sizhao (金嗣炤), Chen Xiujia (陈兆甲), Cao Ling (曹宁), Zheng Jiaqi (郑家祺) and Quan Weiyan (管惟炎) [1990] “EPR of high- $T_c$  superconductor BiSrCaCu<sub>2</sub>OY before the superconducting transition under various temperatures,” *Chinese Journal of Low Temperature Physics*, No. 4.
- Wang Ling (王宁), Chen Kailai (陈凯来) and Wang Dingsheng (王鼎盛) [1986] “Work function of transition-metal surface with submonolayer alkali-metal coverage,” *Physical Review Letters* **56**, 2759-2762.
- Zhou Wei (周薇), Zhang Qiming (张齐鸣), Qu Lijia (曲立茄) and Wang Dingsheng (王鼎盛) [1989] “Interaction and charge transfer in the iron nitride Fe(4)N,” *Physical Review B* **40**, 6393-6397.
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I left China due to family reasons at end of 1983 after a stay of six years [Li, 2003]. In Beijing, I trained five graduate students who completed five M.Sc. theses and one Ph.D. thesis<sup>16</sup> under my supervision. All of them, except one, are now in the USA, against my wish. Since 1984, I worked at the City University of New York for three and half years, and moved to San Jose in 1987. In San Jose, I worked on nonlinear and complex systems, and now more on Science Matters [Lam, 2008; Burguete & Lam, 2008]—in particular, on *histophysics* (the physics of history) and literature as part of science.<sup>17</sup>

## VI. Conclusion

The 1979-1981 visit to USA had profound impact on the life and career of my fellow delegates. After all, it was their first foreign trip ever, and it happened after China had been insulated from the West for a long period of time since 1949. Here is how IoP describes the delegation’s visit to the USA and its aftereffect (from Major Events in [Sun, 2008]):

“Upon the approval by the central government, under the promotion of Professor Woo Chia-Wei of the Northwestern University in USA, an eight-person delegation of our institute consisting of Qian Yongjia *et al.* went to the Northwestern University of the USA to be visiting scholars, signaling the beginning of the wide-range collaboration between our institute and the American physics community which was suspended for many years.”<sup>18</sup>

That is absolutely correct. What could be added is that the visit was funded by the American side and helped to set an example for other delegations to come, saving China a lot of money when money was still in short supply. And the visit helped to cement the friendship and promote understanding between the peoples of China and USA, a positive effect advancing the reform-opening up movement in China starting 30 years ago.

<sup>16</sup> The Ph.D. thesis by SHU Changqing, “Propagating Solitons in Shearing Nematic Liquid Crystals,” was officially in China the first Ph.D. thesis in the field of liquid crystals physics.

<sup>17</sup> Science Matters is a new discipline that treats all human-related matters as part of science [Burguete & Lam, 2008].

<sup>18</sup> The original is written in Chinese: “1978年，经中央批准，在美国西北大学吴家玮教授的促成下，我所钱永嘉等8人赴美国西北大学做访问学者，标志着中断多年之后我所与美国物理界大规模合作的开始。”

## Acknowledgement

It was always my intention to write down the story of this 1979 visit someday. The fact that it occurred earlier than planned was prompted by Zuoyue Wang on Oct. 14, 2008, who was writing a book on the involvement of Chinese American scientists in China's reform-opening up movement and wanted to know about this story in some detail. To prepare for the writing of this paper, following my usual practice, I gave a talk on this trip in a seminar at Peking University, on Jan. 16, 2009, upon the invitation of WU Guosheng. I thank both Wang and Wu for their encouragement in this effort. I am also grateful to Wang Dingsheng for helpful conversations, insights, and his comments after reading of this manuscript; to Chia-Wei Woo for reading and correcting an early draft of this manuscript, and a conversation in Hong Kong on Mar. 24, 2009; and to all the other members of the 1979 delegate for reading the draft of this paper and providing me with corrections and unique insights.

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