

NSC-NWO joint seminar on Generalized Convexity in Game Theory

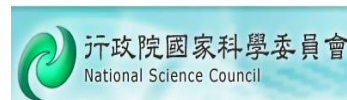


National Sun Yat-sen University

台灣·高雄·中山大學

Kaohsiung, Taiwan.

August 20, 2009



Organizers: Theo Driessen and Ngai-Ching Wong 黃毅青

Room 3001, College of Science Building, National Sun Yat-sen University

高雄市 [中山大學應用數學系](#) [理 3001 教室](#)

2009.8.20 (星期四 Thursday)

- 9:30 **Opening 開幕式 (chair: Jen-Chih Yao 姚任之)**
- 9:40-10:30 Theo Driessen (University of Twente, Netherlands)
A survey on (average-, sub-, total-, permutational-) convexity notions incooperative game theory and examples
- 10:30-10:45 **Coffee and Tea 休息;**
- 10:45-11:30 Wei-Shih Du 杜威仕 (National Kaohsiung Normal University, Taiwan)
Hybrid inclusion and disclusion systems with applications to equilibria and parametric optimization;
- 11:30-12:15 Anna Khmelnitskaya (St.Petersburg, Russia)
On 1-convexity and nucleolus of co-insurance games;
- 12:15-14:00 **Lunch 午餐**
- 14:00-14:45 Shaohua Pan 潘少華 (South China University of Technology, China)
Symmetric cone complementarity problems and C-functions
- 14:45-15:00 **Coffee and Tea 休息**
- 15:00-15:45 Hans Peters: (University of Maastricht, Netherlands)
On convexity of the undominated set for games with transferable utility
- 15:45-16:30 Jean Derks: (University of Maastricht, Netherlands)
On the core and Weber set for restricted cooperative games, and their coincidence for convex games
- 16:00-16:45 **Coffee and Tea 休息**
- 16:45-17:30 Chong Li 李 沖 (Zhejiang University, China)
Kantorovich's theorems of Newton's method for mappings and optimization problems on Lie groups.
- 17:30- **Closing 閉幕式 (chair: Theo Driessen)**

Sponsors: Research Center of Nonlinear Analysis and Discrete Mathematics, Department of Applied Mathematics, National Sun Yat-sen University, Taiwan NSC, and Netherlands NWO.

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<http://www.math.nsysu.edu.tw/~wong/taiwan-dutch2009>

NSC-NWO joint seminar on

Generalized Convexity in Game Theory

NSYSU, Kaohsiung, Taiwan, August 20, 2009.

Room 3001, Department of Applied Mathematics, National Sun Yat-sen University

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Abstract.

A survey on (average-, sub-, total-, permutational-) convexity notions and convex games in cooperative game theory

Theo Driessen

Dept. of Applied Mathematics,
University of Twente, The Netherlands

The core equivalence theorem for convex cooperative games has been established in two stages by Lloyd S. Shapley (1971) and Tatsuro Ichiishi (1981). Appealing examples of convex games were discovered in the eighties, together with additional characterizations of convexity, like a third stage by Rafels (1991). In the nineties adapted convexity notions, called average convexity, subconvexity, total convexity, and permutationally convexity, were introduced, which are surveyed and discussed with respect to the relationship to their core.

Hybrid inclusion and disclusion systems with applications to equilibria and parametric optimization

Wei-Shih Du 杜威仕

Department of Mathematics,
National Kaohsiung Normal University, Kaohsiung 802, Taiwan.
E-mail: wsdu@nknucc.nknu.edu.tw

In this paper, we first establish the existence theorems of the solution of hybrid inclusion and disclusion systems, from which we study mixed types of systems of generalized quasivariational inclusion and disclusion problem. Some applications of existence theorems to feasible points for various mathematical programs with variational constraints, system of vector saddle point and system of minimax theorem are also given.

On 1-convexity and nucleolus of co-insurance games

Anna Khmel'nitskaya

SPB Institute for Economics and Mathematics,
Russian Academy of Sciences, St. Petersburg, Russia

We consider the situation in which a risk is evaluated too much heavy for a single insurance company, but it can be insured by the finite set of companies that share the risk and the premium. Such an insurance situation is modeled through a cooperative TU game, the so-called co-insurance game, first introduced in Fragnelli and Marina (2004). We study the non-emptiness and the structure of the core and the nucleolus of the co-insurance game subject to the premium value. If the premium is large enough, the core is empty. If the premium meets a critical upper bound, the non-emptiness of the core, being in this case a single allocation composed of player's marginal contributions, turns out to be equivalent to the so-called 1-convexity property of the co-insurance game. Moreover, if non-emptiness applies, the co-insurance game inherits the 1-convexity property while lowering the premium till a critical lower bound induced by the individual evaluations of the enormous risk. In addition, 1-convexity of the co-insurance game yields the linearity of the nucleolus which, in particular, appears to be a linear function of the variable premium. If 1-convexity condition does not apply, then for the premium below another critical number we present an algorithm for computing the nucleolus.

The paper is coauthored with Theo Driessen, Vito Fragnelli, Ilya Katsev

Symmetric cone complementarity problems and C-functions

Shaohua Pan 潘少華

Department of Mathematics,
South China University of Technology, China.

In recent years, symmetric cone optimization becomes an active research topic in the field of optimization. In this talk, we will introduce several classes of symmetric cone complementarity problems and the associated complementarity functions (C-functions for short), especially for second-order cone complementarity problems and the SOC complementarity functions. Some open problems related to C-functions are also presented.

On the convexity of the undominated set for cooperative games with transferable utility

Hans Peters

Dept of Quantitative Economics,
University of Maastricht, The Netherlands

We introduce and study a new set-valued solution concept for games with transferable utility, called the 'undominated set'. For balanced games the undominated set coincides with the core and for anti-balanced games with the anti-core. In this respect, it exhibits a coalitional fairness property: if one coalition gains, then all coalitions should gain (if possible); and if one coalition loses then all coalitions should lose (if possible). The undominated set is defined by considering the (ex ante) possibility of sidepayments between coalitions and the (ex post) possibility of sidepayments with respect to proposals (pre-imputations) that are on the bargaining table. Undominated allocations (proposals) are those allocations that are cannot be Pareto dominated for the coalitions by using such sidepayments, under the assumption of complete uncertainty whether or not agreement is going to be reached. We characterize the undominated set by balancedness conditions and study its possible properties: convexity, connectedness, contractibility.

On the core and Weber set for restricted cooperative games and their coincidence for convex games

Jean Derks

Dept of Mathematics,
University of Maastricht, The Netherlands

For standard cooperative games the core is contained in the convex hull of its marginal contribution allocations, also known as the Weber set. Coincidence of both sets holds exactly when the cooperative game is convex. In general these results cannot be extended to the restricted case, i.e., when not all coalitional worths are known, and thus, properties have to be imposed on the set of coalitions with known worth, also referred to as the feasible coalitions. We present some examples of the new model where the extensions of the standard results fail to hold, and provide an overview of properties on the feasible coalitions for which extensions of the standard results are attained.

Kantorovich's theorems of Newton's method for mappings and optimization problems on Lie groups

Chong Li 李冲

Department of Mathematics,
Zhejiang University, China

. With the classical assumptions on f , a convergence criterion of Newton's method (independent of affine connections) to find zeros of a mapping f from a Lie group to its Lie algebra is established, and estimates of the convergence domains of Newton's method are obtained. Applications to optimization on Lie group are provided and some recent results are extended and improved accordingly.

Generalized Convexity in Game Theory

NSYSU, Kaohsiung, Taiwan, August 20, 2009.

Lodging Arrangement: Ambassador Hotel 國賓大飯店

Address: No.202, Ming Sheng 2nd Road, Kaohsiung City, Taiwan, R.O.C.

高雄市民生二路 202 號 Tel: (+886-7-) 211-5211

http://www.ambassadorhotel.com.tw/KS/ambassador_kaohsiung.htm

NO.	Name 姓名	Institute 服務單位	Nights stay for 住宿夜晚	Room 房型	Total nights staying 備註
1	Theo Driessen and Anna Khmelnitskaya	University of Twente, The Netherlands, and Russian Academy of Sciences	08/19~08/21	Double 雙人房	3 nights 晚
2	Hans Peters and Leni	University of Maastricht, The Netherlands	08/19~08/20	Double 雙人房	2 nights 晚
3	Rene van den Brink	Free University at Amsterdam	08/19~08/20	Single 單人房	2 nights 晚
4	Imma Curiel	University of the Netherlands Antilles, at Curacao	08/19~08/20	Single 單人房	2 nights 晚
5	Jean Derks	University of Maastricht, The Netherlands	08/19~08/20	Single 單人房	2 nights 晚

Remarks:

1. The above seven 7 guests will arrive Kaohsiung by high speed train on Wednesday evening, 19 august, 2009, at 23.59 pm. This is the last train of the day. Representatives from the Ambassador Hotel will greet and pick up our guests at the Kaohsiung highspeed train station (also known as Zuoying Station).
2. There will be a shuttle bus offered by the Hotel to send our guests to the venue of the Workshop by 9 a.m. The Workshop will take place at Room 3001, College of Science Building, National Sun Yat-sen University (國立中山大學). The opening is scheduled at 9:30 a.m.

大會網址 homepage : <http://www.math.nsysu.edu.tw/~wong/taiwan-dutch2009/>

聯絡人 Contact : 黃毅青教授 Prof. Ngai-Ching Wong

連絡電話 Office Tel : (07)5252000 轉 3818 手機 Mobile : 0937671710



HOME > Overview > Area Map

Area Map

Ambassador Hotel Kaohsiung

Add : No.202, MingSheng 2nd Road, Kaohsiung City, Taiwan, R.O.C.
TEL : 886-7-211-5211 FAX : 886- 7-201-0348



- Area Map
- Transportation
- Surrounding Attraction Spots
- Facilities
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- Honors Over the Years



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HOME > Overview > Transportation

Transportation



Area Map
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Kaohsiung International Airport

Taxi

Taxi fee approx NT\$300, driving distance 25min.

MRT

1. Take Red Route R4 『Kaohsiung International Airport』 to R9 『Central Park』 and then walking distance about 15min to the Ambassador Hotel or transit bus Red 25 to 『The Ambassador Hotel』 station.

2. Take Red Route R4 『Kaohsiung International Airport』 to R10 『Formosa Boulevard』 and transit to Orange Route to O4 『City Council』 and then walking distance about 10min to the Ambassador Hotel.

Bus

Take the Airport Express buses or Bus 301 to 『Kaohsiung Train station』, and transit to bus 12 or 248 to 『Taiwan Bank』, and then walking distance to the Ambassador Hotel is approx 10min.

Hotel transportation service :

One way fare NT\$800 up/per car. (Van, maximum for 7 passengers, Advance Reservation Required)



Taiwan High Speed Rail

Taxi

Taxi fee approx NT\$250, driving distance 20min.

MRT

1. Take Red Route R16 『Zuoying』 to R9 『Central Park』 and then walking distance about 15min to the Ambassador Hotel or transit bus Red 25 to 『The Ambassador Hotel』 station.

2. Take Red Route R16 『Zuoying』 to R10 『Formosa Boulevard』 and transit to Orange Route to O4 『City Council』 and then walking distance about 10min to the Ambassador Hotel.

Hotel transportation service

One way fare NT\$600 up/per car. (Limousine, maximum for 3 passengers. Advance Reservation Required)



Kaohsiung Train Station

Taxi

Taxi fee approx NT\$120, driving distance 10min.

MRT

1. Take Red Route R11 『Kaohsiung Main Station』 to R9 『Central Park』 and then walking distance about



15min to the Ambassador Hotel or transit bus Red 25 to 『The Ambassador Hotel』 station.

2.Take Red Route R11 『Kaohsiung Main Station』 to R10 『Formosa Boulevard』 and transit to Orange Route to O4 『City Council』 and then walking distance about 10min to the Ambassador Hotel.

Bus :

Take No. 12 or 248 bus to 『Taiwan Bank』, then about 10min walking distance to the Ambassador Hotel.

Hotel transportation service

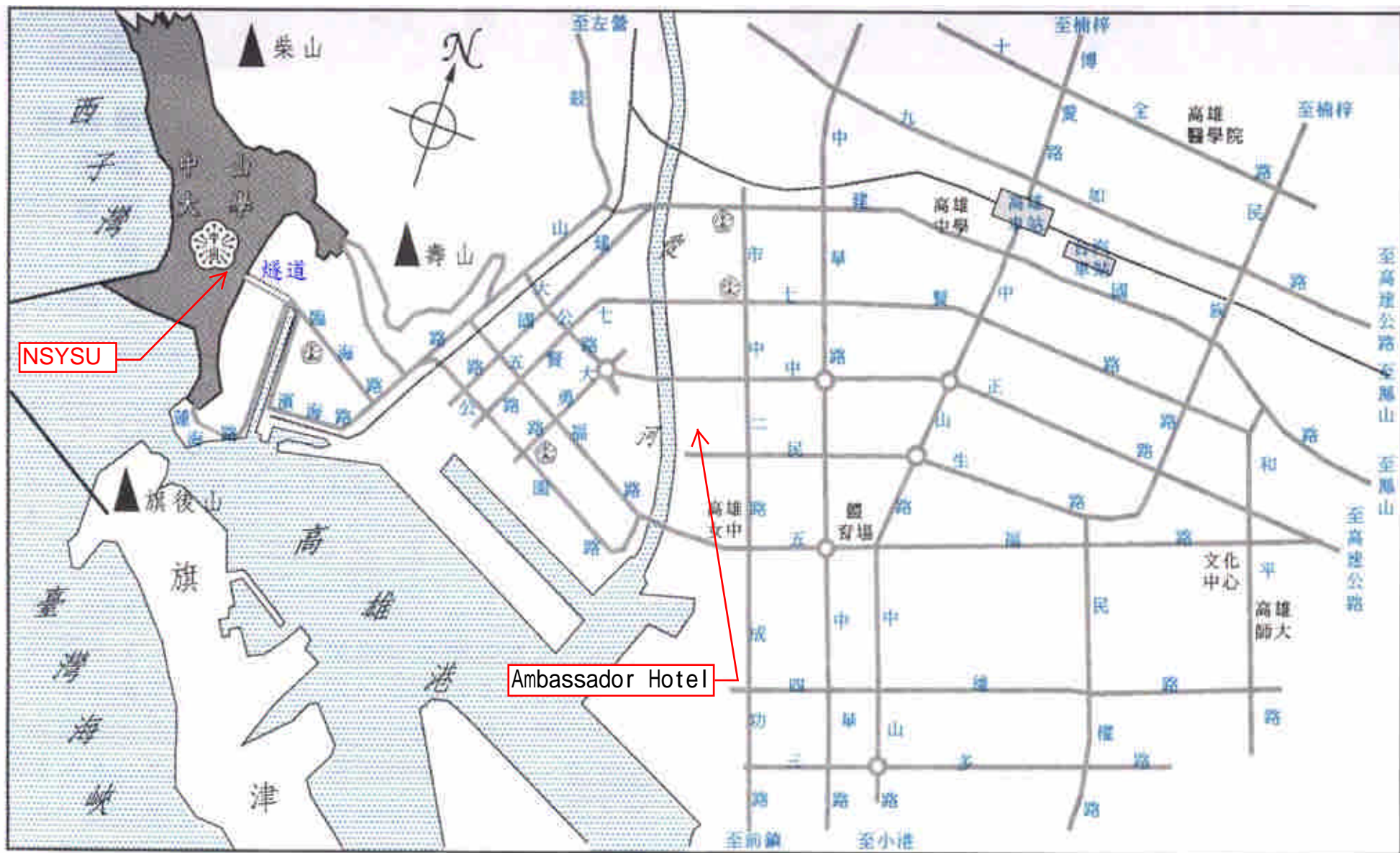
One way fare NT\$600 up/per car. (Limousine, maximum for 3 guests. Advance Reservation Required)



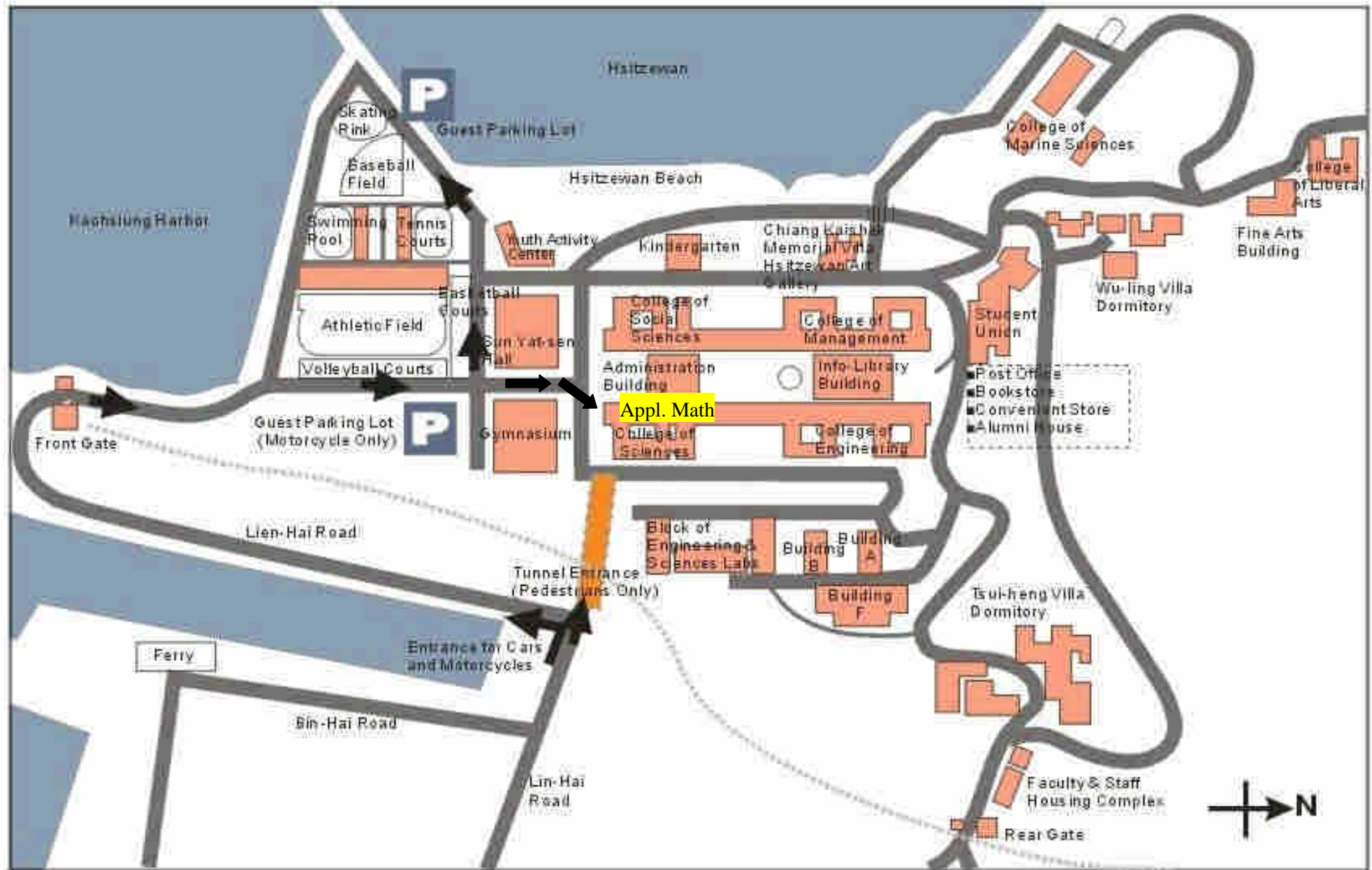
National Highway

Take off at 『Jhongjheng Interchange』, and drive straight to Jhongjhen 4th Road, and then turn left to Mingsheng Road. (Approx 15min)

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國立中山大學高雄市位置圖



National Sun Yat-sen University Campus Locations

National Sun Yat-sen University Campus Locations