

**The 10<sup>th</sup> Seminar on**  
**Linear Algebra and its Applications**

**Faculty of Mathematics and Computer & Mahani Mathematical Research Center**

**Shahid Bahonar University of Kerman, Kerman, Iran**

**16-19 August, 2020**

**Seminar Program**

**Dedicated to Alireza Afzalipour and Fakhreh Saba,  
the Founders of Kerman University**

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## Timetable

(Time zone in Iran (GMT+4:30))

|                     | August 16            | August 17            | August 18    | August 19    |
|---------------------|----------------------|----------------------|--------------|--------------|
| 8:30 AM - 10:30 AM  | Workshop             | Lectures             | Lectures     | Lectures     |
| 10:30 AM - 11:00 AM | Break and Networking |                      |              |              |
| 11:00 AM - 1:00 PM  | Workshop             | Lectures             | Lectures     | Lectures     |
| 1:00 PM - 3:00 PM   | Lunch Break          |                      |              |              |
| 3:00 PM - 4:00 PM   | Workshop             | Posters              | Posters      | Workshop     |
| 4:00 PM - 5:00 PM   | Workshop             | Lectures             | Posters      | Workshop     |
| 5:00 PM - 5:30 PM   | Opening              | Lectures             | Lectures     | Workshop     |
| 5:30 PM - 6:00 PM   | Opening              | Break and Networking |              |              |
| 6:00 PM - 7:00 PM   | Opening              | Plenary Talk         | Plenary Talk | Plenary Talk |
| 7:15 PM - 8:15 PM   | Plenary Talk         | Plenary Talk         | Plenary Talk | Plenary Talk |
| 8:30 PM - 9:30 PM   | Plenary Talk         | Plenary Talk         | Plenary Talk | Closing      |

## Seminar Program

**Day 1: Sunday, August 16**  
(Time zone in Iran (GMT+4:30))

| Time                | Title   |
|---------------------|---|
| 8:30 AM - 10:30 AM  | Workshop<br><b>Farshid Abdollahi</b>          |
| 10:30 AM - 11:00 AM | Break and Networking                          |
| 11:00 AM - 1:00 PM  | Workshop<br><b>Mahdieh Soleymani Baghshah</b> |
| 1:00 PM - 3:00 PM   | Lunch Break                                   |
| 3:00 PM - 5:00 PM   | Workshop<br><b>Mehdi Eftekhari</b>            |
| 5:00 PM - 7:00 PM   | Opening                                       |
| 7:15 PM - 8:15 PM   | Plenary Talk<br><b>Rajendra Bhatia</b>        |
| 8:30 PM - 9:30 PM   | Plenary Talk<br><b>Michael L. Overton</b>     |

## Seminar Program

**Day 2: Monday, August 17**  
(Time zone in Iran (GMT+4:30))

| Time                | Title                                 |
|---------------------|---------------------------------------|
| 8:30 AM - 10:30 AM  | Lectures                              |
| 10:30 AM - 11:00 AM | Break and Networking                  |
| 11:00 AM - 1:00 PM  | Lectures                              |
| 1:00 PM - 3:00 PM   | Lunch Break                           |
| 3:00 PM - 4:00 PM   | Posters                               |
| 4:00 PM - 5:00 PM   | Lectures                              |
| 5:00 PM - 5:30 PM   | Lectures                              |
| 5:30 PM - 6:00 PM   | Break and Networking                  |
| 6:00 PM - 7:00 PM   | Plenary Talk<br><b>Nick Trefethen</b> |
| 7:15 PM - 8:15 PM   | Plenary Talk<br><b>Chi-Kwong Li</b>   |
| 8:30 PM - 9:30 PM   | Plenary Talk<br><b>Anne Greenbaum</b> |

## Seminar Program

**Day 3: Tuesday, August 18**

**(Time zone in Iran (GMT+4:30))**

| <b>Time</b>                | <b>Title</b>   |
|----------------------------|--|
| <b>8:30 AM - 10:30 AM</b>  | <b>Lectures</b>                                      |
| <b>10:30 AM - 11:00 AM</b> | <b>Break and Networking</b>                          |
| <b>11:00 AM - 1:00 PM</b>  | <b>Lectures</b>                                      |
| <b>1:00 PM - 3:00 PM</b>   | <b>Lunch Break</b>                                   |
| <b>3:00 PM - 4:00 PM</b>   | <b>Posters</b>                                       |
| <b>4:00 PM - 5:00 PM</b>   | <b>Posters</b>                                       |
| <b>5:00 PM - 5:30 PM</b>   | <b>Lectures</b>                                      |
| <b>5:30 PM - 6:00 PM</b>   | <b>Break and Networking</b>                          |
| <b>6:00 PM - 7:00 PM</b>   | <b>Plenary Talk</b><br><b>Mohammad Sal Moslehian</b> |
| <b>7:15 PM - 8:15 PM</b>   | <b>Plenary Talk</b><br><b>Panayiotis Psarrakos</b>   |
| <b>8:30 PM - 9:30 PM</b>   | <b>Plenary Talk</b><br><b>Tin-Yau Tam</b>            |

## Seminar Program

**Day 4: Wednesday, August 19**

**(Time zone in Iran (GMT+4:30))**

| <b>Time</b>                | <b>Title</b>  |
|----------------------------|---|
| <b>8:30 AM - 10:30 AM</b>  | <b>Lectures</b>                                       |
| <b>10:30 AM - 11:00 AM</b> | <b>Break and Networking</b>                           |
| <b>11:00 AM - 1:00 PM</b>  | <b>Lectures</b>                                       |
| <b>1:00 PM - 3:00 PM</b>   | <b>Lunch Break</b>                                    |
| <b>3:00 PM - 5:30 PM</b>   | <b>Workshop</b><br><b>Behnam Hashemi</b>              |
| <b>5:30 PM - 6:00 PM</b>   | <b>Break and Networking</b>                           |
| <b>6:00 PM - 7:00 PM</b>   | <b>Plenary Talk</b><br><b>Qingxiang Xu</b>            |
| <b>7:15 PM - 8:15 PM</b>   | <b>Plenary Talk</b><br><b>Fatemeh Panjeh Ali Beik</b> |
| <b>8:30 PM - 9:30 PM</b>   | <b>Closing</b>  |

## Plenary Talks (in English)

### Day 1: Sunday, August 16

| Time              | Speaker            | Title   | Link   |
|-------------------|--------------------|---|--------|
| 7:15 PM - 8:15 PM | Rajendra Bhatia    | Metrics and means on positive definite matrices | Link M |
| 8:30 PM - 9:30 PM | Michael L. Overton | Crouzeix's conjecture                           | Link M |

**Link M:** <http://slla10.ir/main>

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### Day 2: Monday, August 17

| Time              | Speaker        | Title   | Link   |
|-------------------|----------------|---|--------|
| 6:00 PM - 7:00 PM | Nick Trefethen | Chebfun and continuous linear algebra                                     | Link M |
| 7:15 PM - 8:15 PM | Chi-Kwong Li   | Joint numerical ranges and commutative matrices                           | Link M |
| 8:30 PM - 9:30 PM | Anne Greenbaum | Crouzeix's conjecture, extremal Blaschke products, and $K$ -spectral sets | Link M |

**Link M:** <http://slla10.ir/main>

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## Plenary Talks (in English)

### Day 3: Tuesday, August 18

| Time              | Speaker                 | Title  | Link   |
|-------------------|-------------------------|--|--------|
| 6:00 PM - 7:00 PM | Mohammad Sal Moslehian  | Choi-Davis-Jensen inequality revisited                                       | Link M |
| 7:15 PM - 8:15 PM | Panayiotis J. Psarrakos | From matrices to matrix polynomials  | Link M |
| 8:30 PM - 9:30 PM | Tin-Yau Tam             | Geometry and inequalities associated with symmetric space of noncompact type | Link M |

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### Day 4: Wednesday, August 19

| Time              | Speaker                 | Title   | Link   |
|-------------------|-------------------------|---|--------|
| 6:00 PM - 7:00 PM | Qingxiang Xu            | Generalized parallel sum of adjointable operators on Hilbert $C^*$ -modules                                   | Link M |
| 7:15 PM - 8:15 PM | Fatemeh Panjeh Ali Beik | A survey on preconditioning techniques for double saddle point systems: spectral and field-of-values analyses | Link M |

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# Workshops (in Persian)

Day 1: Sunday, August 16

| Time                | Speaker                    | Title   | Link   |
|---------------------|----------------------------|---|--------|
| 08:30 AM - 10:30 AM | Farshid Abdollahi          | Some properties of singular value decomposition and its applications to data mining | Link M |
| 10:30 AM - 11:00 AM | Break and Networking       |   | Link C |
| 11:00 AM - 1:00 PM  | Mahdieh Soleymani Baghshah | Deep learning in data analysis  | Link M |
| 1:00 PM - 3:00 PM   | Lunch                      |   |        |
| 3:00 PM - 5:00 PM   | Mehdi Eftekhari            | Dimensionality reduction  | Link M |

**Link M:** <http://slla10.ir/main>

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Day 4: Wednesday, August 19

| Time              | Speaker        | Title  | Link   |
|-------------------|----------------|--|--------|
| 3:00 PM - 5:30 PM | Behnam Hashemi | Software in Numerical Linear Algebra (Chebfun toolbox) | Link M |

**Link M:** <http://slla10.ir/main>

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# Lectures (in Persian)

Day 2: Monday, August 17

| Time                | Author(s)  | Title   | Link   |
|---------------------|--|---|--------|
| 8:30 AM - 9:00 AM   | Davod Khojasteh Salkuyeh*<br>(Radjabalipour Lecture) | On the preconditioning of generalized saddle point problems using symmetric and skew-symmetric iteration method | Link A |
|                     | Kazem Ghanbari*                                      | Matrix flows maintaining positivity   | Link B |
| 9:00 AM - 9:30 AM   | Alimohammad Nazari*,<br>Atiyeh Nezami                | A remarkable solution for symmetric inverse eigenvalue problem  | Link A |
|                     | Amir Jafari*,<br>Amin Najafei Amin                   | Quasi invariant polynomials of a matrix   | Link B |
| 9:30 AM - 10:00 AM  | Mohammad Khorsand<br>Zak*                            | Minimal residual HSS iteration method for the Sylvester equation  | Link A |
|                     | Mohsen Tourang*,<br>Mostafa Zangiabadi               | A new bound for the Perron vector of weakly irreducible nonnegative tensors                                     | Link B |
| 10:00 AM - 10:30 AM | زهرة شفیعی*, فرشید عبدالمهی                          | موازی سازی الگوریتم تجزیه مقادیر منفرد بر روی GPU   | Link A |
|                     | علی برائی نژاد، داود فروتن نیا*                      | کران پایین عملگرهای ماتریسی از فضای دنباله‌ای تفاضلی پسر و  | Link B |
| 10:30 AM - 11:00 AM | Break and Networking                                 |   | Link C |

\*: Speaker

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# Lectures (in Persian)

Day 2: Monday, August 17

| Time                | Author(s)   | Title  | Link   |
|---------------------|---|--|--------|
| 11:00 AM - 11:30 AM | Mohammad Mahdi Izadkhah*                          | On semi-convergence of the improved symmetric successive over-relaxation method for singular saddle point problems | Link A |
|                     | Mohammad Soleymani*                               | Multivariate group majorization on $M_{n,m}$ and its linear preservers   | Link B |
| 11:30 AM - 12:00 PM | Faezeh Toutounian, Zahra Asgari*, Esmail Babolian | A new projection method for solving large Sylvester equations  | Link A |
|                     | Yamin Sayyari*, Ahmad Mohammadhasani              | Rational rotation matrices and linear preservers of majorization   | Link B |
| 12:00 PM - 12:30 PM | Majid Adib, Alireza Movahedian*                   | Numerically solving the singular semi-Sylvester equation   | Link A |
|                     | Asma Ilkhanizadeh Manesh*                         | Slt-majorization and its linear preservers   | Link B |
| 12:30 PM - 1:00 PM  | Najmeh Azizizadeh*, Azita Tajaddini, Amin Rafiei  | Implicitly restarted global GMRES for solving $AXB = C$  | Link A |
|                     | Fatemeh Khalooei*                                 | Majorization relation and linear preservers  | Link B |
| 1:00 PM - 3:00 PM   | <b>Lunch</b>                                      |  |        |

\*: Speaker

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# Lectures (in Persian)

Day 2: Monday, August 17

| Time              | Author(s)  | Title   | Link   |
|-------------------|--|---|--------|
| 4:00 PM - 4:30 PM | Sedighe Jamshidvand*,<br>Fateme Olia,<br>Shaban Ghalandarzadeh | Normalization method on Max-plus algebra and its application  | Link A |
|                   | سمیرا بیاتی، حبیب اله سعیدی*                                   | قیمت‌گذاری اختیار معامله سید مرتبه کسری   | Link B |
| 4:30 PM - 5:00 PM | Forugh Valian*,<br>Mohammad Ali Vali,<br>Yadollah Ordokhani    | Numerical solution of a class of fractional optimal control problems using the fractional-order Bernoulli wavelet functions | Link A |
|                   | Nasibeh Mollahasani*,<br>Habibollah Saeedi                     | A matrix approach for time fractional option pricing  | Link B |
| 5:00 PM - 5:30 PM | Mehdi Razavi*,<br>Mohammad Mehdi<br>Hosseini, Abbas Salemi     | Matrix forms of the Black-Scholes equation with boundary conditions   | Link A |
|                   | ابوالفضل رفیع پور*   | استفاده از نظریه های آموزش ریاضی در تدریس جبر خطی   | Link B |
| 5:30 PM - 6:00 PM | Break and Networking   |   | Link C |

\*: Speaker

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# Lectures (in Persian)

Day 3: Tuesday, August 18

| Time                | Author(s)   | Title   | Link   |
|---------------------|---|---|--------|
| 8:30 AM - 9:00 AM   | Ali Taghavi*<br><b>(Radjabalipour Lecture)</b>                                  | Maps preserving strong Jordan multiple $*$ -product on $*$ -algebras  | Link A |
|                     | Mahdi Eftekhari,<br>Farid Saberi-Movahed*,<br>Adel Mehrpooya                    | Supervised feature selection via information gain, maximum projection and minimum redundancy                    | Link B |
| 9:00 AM - 9:30 AM   | S. Mahmoud Manjegani,<br>Hojr Shokooh Saljooghi*                                | Max-spectral radius of products for non-negative matrices   | Link A |
|                     | Atefeh Taghavi*,<br>Esfadiar Eslami,<br>Enrique Herrera Viedma,<br>Raquel Ureña | A new feedback approach to increase consensus based on experts' self confidence, trust and similarity           | Link B |
| 9:30 AM - 10:00 AM  | Ali Dadkhah*,<br>Mohammad Sal Moslehian   | The relationship between $n$ -positivity, linearity and continuity of positive mappings between $C^*$ -algebras | Link A |
|                     | مهسا ثمره جهانی*,<br>مهدی افتخاری,<br>غلامرضا آقاملانی,<br>فرید صابری موحد      | انتخاب ویژگی با معیار بیشینه تصویر و کمینه افزونگی  | Link B |
| 10:00 AM - 10:30 AM | Alireza Sattarzadeh*,<br>Hossein Mohebi   | Convex analysis and spectral functions  | Link A |
|                     | رضا پورموسی*  | تعیین توزیع های پربولیک تعمیم یافته در یک ماتریس تصادفی   | Link B |
| 10:30 AM - 11:00 AM | <b>Break and Networking</b>   |   | Link C |

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# Lectures (in Persian)

Day 3: Tuesday, August 18

| Time                | Author(s)   | Title  | Link   |
|---------------------|---|--|--------|
| 11:00 AM - 11:30 AM | Mohammad Ali Yaghoobi*  | Using goal programming to solve least squares problems                                       | Link A |
|                     | Saeed Karami*   | Is the origin included in the polynomial numerical hulls of direct sum of two Jordan blocks? | Link B |
| 11:30 AM - 12:00 PM | Fatemeh Panjeh Ali Beik,<br>Mehdi Najafi-Kalyani*               | A note to preconditioners extracted from majorization matrix for multi-linear systems        | Link A |
|                     | Sharifeh Rezagholi*   | Some results on the higher rank numerical ranges of $(A - \lambda I)^{(\alpha+1)}$           | Link B |
| 12:00 PM - 12:30 PM | Fateme Olia*,<br>Sedighe Jamshidvand,<br>Amirhossein Amiraslani | Solving linear systems over max-plus algebra through Pseudo-inverse method                   | Link A |
|                     | Maryam Khosravi*  | Some applications of linear algebra in combinatorics   | Link B |
| 12:30 PM - 1:00 PM  | Hanif Mirzaei*  | Constructing cross sectional area of vibrating rod using two spectra                         | Link A |
|                     | Fatemeh Motialah*,<br>Mohammad Hassan<br>Shirdareh Haghighi     | On Laplacian spectral characterization of generalized sun graphs                             | Link B |
| 1:00 PM - 3:00 PM   | <b>Lunch</b>  |  |        |

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# Lectures (in Persian)

Day 3: Tuesday, August 18

| Time              | Author(s)   | Title   | Link   |
|-------------------|---|---|--------|
| 5:00 PM - 5:30 PM | Sayed Amjad Samareh Hashemi*,<br>Mostafa Poursharifi      | An operational wavelet approach for 2D Abel integral equation | Link A |
|                   | Farzaneh Tayebi Semnani*,<br>Marjan Sheibani Abdolyousefi | Generalized Drazin inverses for linear operators              | Link B |
| 5:30 PM - 6:00 PM | Break and Networking                                      |   | Link C |

\*: Speaker

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# Lectures (in Persian)

Day 4: Wednesday, August 19

| Time                | Author(s)   | Title   | Link   |
|---------------------|---|---|--------|
| 8:30 AM - 9:00 AM   | Hanif Mirzaei,<br>Kazem Ghanbari*                                     | Inverse problem for H-symmetric pentadiagonal matrices                                  | Link A |
|                     | Mohsen Kian*  | Norm inequalities related to the Kadison inequality                                     | Link B |
| 9:00 AM - 9:30 AM   | Maryam Shams Solary*  | Anti-pentadiagonal block band matrices with perturbed corners                           | Link A |
|                     | Rahmatollah Lashkaripour,<br>Mojtaba Bakherad,<br>Monire Hajmohamadi* | More accurate generalizations of Berezin number inequalities                            | Link B |
| 9:30 AM - 10:00 AM  | Mehdi Hassani*  | Conditional square matrices of order 2 with given determinant                           | Link A |
|                     | Asiyeh Rezaei*,<br>Farzad Dadipour                                    | The triangle inequality with $n$ -elements in quasi Banach spaces                       | Link B |
| 10:00 AM - 10:30 AM | Ahmad Mohammadhasani*,<br>Yamin Sayyari                               | Reflection matrices and linear preservers of majorization                               | Link A |
|                     | محمد ایزدی، نازنین قاسمی نژاد*  | روش ماتریسی چندجمله‌ای و تکنیک خطی‌سازی برای تقریب جواب‌های دستگاه معادلات دیفرانسیل چن | Link B |
| 10:30 AM - 11:00 AM | Break and Networking  |   | Link C |

\*: Speaker

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# Lectures (in Persian)

Day 4: Wednesday, August 19

| Time                | Author(s)   | Title   | Link   |
|---------------------|---|---|--------|
| 11:00 AM - 11:30 AM | Hossein Sadeghi*,<br>Farzollah Mirzapour                  | The structure of weighted shift-invariant subspaces                                 | Link A |
|                     | Mehran Namjoo*,<br>Mehdi Karami,<br>Mehran Aminian        | Non-standard finite difference scheme for a fractional-order chaotic system         | Link B |
| 11:30 AM - 12:00 PM | Akbar Nazari,<br>Mohammad Amin<br>Moarrefi*               | The trace class on the proper $H^*$ -algebra structure                              | Link A |
|                     | Majid Erfanian*,<br>Hamed Zeidabadi                       | Using finite element method for solving weakly singular Volterra integral equations | Link B |
| 12:00 PM - 12:30 PM | محمد حیدری،<br>سید ابوالفضل شاهزاده فاضلی*،<br>ندا اسحاقی | مساله مقدار ویژه معکوس مرتبه دوم برای ماتریس پیکانی                                 | Link B |
| 1:00 PM - 3:00 PM   | <b>Lunch</b>  |   |        |

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## Posters (in Persian)

Day 2: Monday, August 17

| Time              | Author(s)   | Title  | Link   |
|-------------------|---|--|--------|
| 3:00 PM - 3:20 PM | Gholamreza Aghamollaei,<br>Sharifeh Rezagholi*          | Some results on pseudospectrum of matrices   | Link A |
|                   | مهدی رضوی*  | تأثیر عملگرهای ماتریسی بر کاهش زمان تصمیم گیری در بازارهای مالی                                    | Link B |
| 3:20 PM - 3:40 PM | Parastoo Heiatian Naeini*                               | Conditions of reflexivity for multiplication operators on Banach function spaces on a plane domain | Link A |
|                   | امیر محمد محرری*،<br>سید محمد مهدی حسینی،<br>رضا دوستکی | مقایسه روش درخت دوجمله‌ای و بلک-شولز   | Link B |
| 3:40 PM - 4:00 PM | Mehdi Hassani*  | A remark on Smith's determinant  | Link A |
|                   | امین رفیعی،<br>معصومه یادگاری،<br>هانیه رجبی*           | پیش شرط پارامتری شامل ماتریس مکمل شور برای مسئله نقطه زینی نامتقارن                                | Link B |

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## Posters (in Persian)

Day 3: Tuesday, August 18

| Time              | Author(s)  | Title   | Link   |
|-------------------|--|---|--------|
| 3:00 PM - 3:20 PM | فرشته آراد*، ایوب شیخی   | مقایسه شبکه عصبی سلسه مراتبی با تحلیل مسیر در مدل‌های رگرسیونی                                    | Link A |
|                   | Mohsen Kian*   | An extension of the numerical radius  | Link B |
| 3:20 PM - 3:40 PM | سامان رفیعی ساردو*،<br>سوده حسینی                                    | تشخیص وب سایت‌های فیشینگ با یک رویکرد مبتنی بر متن کاوی   | Link A |
|                   | Asma Ilkhanizadeh<br>Manesh*   | Ub-majorization on $M_{m,n}$ and its linear preservers  | Link B |
| 3:40 PM - 4:00 PM | Abdolhossein Naserasadi*،<br>Ali Hassani،<br>Faranges Kyanfar        | Classification of handwritten digits using singular value decomposition                           | Link A |
|                   | Rahmatollah<br>Lashkaripour،<br>Fatemeh Goli*،<br>Monire Hajmohamadi | Some generalizations of the numerical radius inequalities   | Link B |
| 4:00 PM - 4:20 PM | Yasin Fadaei*،<br>Ali Ahmadi،<br>Ali Ansari Ardali                   | Modeling of leukemia B cells using system of fractional ordinary differential equations           | Link A |
|                   | Vahid Adish*،<br>Maryam Khosravi                                     | Lower bounds for the energy of bipartite graphs   | Link B |
| 4:20 PM - 4:40 PM | Mohammad Khorsand<br>Zak*  | Steepest descent NSCG iteration method for solving non-symmetric positive definite linear systems | Link A |
|                   | علی محمد نظری،<br>فاطمه سادات موسوی*                                 | مساله مقدار ویژه معکوس ماتریس شبه سلول  | Link B |
| 4:40 PM - 5:00 PM | Javad Farokhi Ostad*   | Operational equations systems   | Link A |

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