2023 Simons Math Summer Workshop - Week 3

Events for:
Monday, August 21st - Friday, August 25th

Monday, August 21st

8:30am Workshop: Breakfast - SCGP Cafe

Title: Breakfast

9:30am Workshop: Danilo Lewanski - SCGP 102

Speaker: Danilo Lewanski

Title: A spin on Hurwitz theory and Topological Recursion

Abstract: Hurwitz numbers enumerate branched coverings of Riemann surfaces and provide a rich sandbox of examples for enumerative geometry and neighbouring areas. Surprisingly, there is a formula that connects them to the intersection theory of the moduli spaces of stable curves: the ELSV formula. Furthermore, these numbers enjoy an integrability of type 2D-Toda, result that has been later employed in the GW/Hurwitz correspondence. The topological recursion is a procedure originally arising from random matrix models that takes as input a spectral curve — a Riemann surface with some extra data on it — and returns the solution of some enumerative geometric problem. In fact topological recursion is under certain constraints equivalent to the Givental-Teleman reconstruction for semisimple cohomological field theories presented in Zvonkine’s course. A spin-off from the research on the mirror symmetry on Calaby-Yau 3-folds led to the generation of Hurwitz numbers via topological recursion. Over time this result has been generalised in different directions, including the Hurwitz count of Riemann surfaces with a spin structure, which are conjecturally determining Gromov-Witten invariants of surfaces with smooth canonical divisor.

10:45am Workshop: Coffee - SCGP Cafe

Title: Coffee

11:30am Workshop: Dimitri Zvonkine - SCGP 102

Speaker: Dimitri Zvonkine

Title: Teleman's classification of semisimple cohomological field theories and applications
1:00pm  **Workshop: Lunch - SCGP 102**

    Title: Lunch

3:30pm  **Tea time - SCGP Cafe**

    Title: Tea Time

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**Tuesday, August 22nd**

8:30am  **Workshop: Breakfast - SCGP Cafe**

    Title: Breakfast

9:30am  **Workshop: Danilo Lewanski - SCGP 102**

    **Speaker:** Danilo Lewanski

    **Title:** A spin on Hurwitz theory and Topological Recursion

    **Abstract:** Hurwitz numbers enumerate branched coverings of Riemann surfaces and provide a rich sandbox of examples for enumerative geometry and neighbouring areas. Surprisingly, there is a formula that connects them to the intersection theory of the moduli spaces of stable curves: the ELSV formula. Furthermore, these numbers enjoy an integrability of type 2D-Toda, result that has been later employed in the GW/Hurwitz correspondence. The topological recursion is a procedure originally arising from random matrix models that takes as input a spectral curve — a Riemann surface with some extra data on it — and returns the solution of some enumerative geometric problem. In fact topological recursion is under certain constraints equivalent to the Givental-Teleman reconstruction for semisimple cohomological field theories presented in Zvonkine’s course. A spin-off from the research on the mirror symmetry on Calaby-Yau 3-folds led to the generation of Hurwitz numbers via topological recursion. Over time this result has been generalised in different directions, including the Hurwitz count of Riemann surfaces with a spin structure, which are conjecturally determining Gromov-Witten invariants of surfaces with smooth canonical divisor.

10:45am  **Workshop: Coffee - SCGP Cafe**

    **Title:** Coffee

11:30am  **Workshop: Dimitri Zvonkine - SCGP 102**

    **Speaker:** Dimitri Zvonkine

    **Title:** Teleman's classification of semisimple cohomological field theories and applications
1:00pm  **Workshop: Lunch - SCGP 102**

**Title:** Lunch

4:00pm  **Workshop and Public Tea - Lobby**

**Title:** Public Tea

5:00pm  **- SCGP 103**

**Title:** Summer Concert Series - Leon Livshin Concert - Unraveling Ravel

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**Wednesday, August 23rd**

8:30am  **Workshop: Breakfast - SCGP Cafe**

**Title:** Breakfast

9:30am  **Workshop: Danilo Lewanski - SCGP 102**

**Speaker:** Danilo Lewanski

**Title:** A spin on Hurwitz theory and Topological Recursion

**Abstract:** Hurwitz numbers enumerate branched coverings of Riemann surfaces and provide a rich sandbox of examples for enumerative geometry and neighbouring areas. Surprisingly, there is a formula that connects them to the intersection theory of the moduli spaces of stable curves: the ELSV formula. Furthermore, these numbers enjoy an integrability of type 2D-Toda, result that has been later employed in the GW/Hurwitz correspondence. The topological recursion is a procedure originally arising from random matrix models that takes as input a spectral curve — a Riemann surface with some extra data on it — and returns the solution of some enumerative geometric problem. In fact topological recursion is under certain constraints equivalent to the Givental-Teleman reconstruction for semisimple cohomological field theories presented in Zvonkine’s course. A spin-off from the research on the mirror symmetry on Calabi-Yau 3-folds led to the generation of Hurwitz numbers via topological recursion. Over time this result has been generalised in different directions, including the Hurwitz count of Riemann surfaces with a spin structure, which are conjecturally determining Gromov-Witten invariants of surfaces with smooth canonical divisor.

10:45am  **Workshop: Coffee - SCGP Cafe**

**Title:** Coffee

12:00pm  **Workshop: Lunch - SCGP Cafe**
Title: Lunch

1:00pm - Sunken Meadow State Park, New York State Reference Rte 908K, Kings Park, NY 11754, USA

Title: Beach Outing: Sunken Meadow Beach - 1-5PM

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**Thursday, August 24th**

8:30am Workshop: Breakfast - SCGP Cafe

Title: Breakfast

9:30am Workshop: Dimitri Zvonkine - SCGP 102

Speaker: Dimitri Zvonkine

Title: Teleman's classification of semisimple cohomological field theories and applications

10:45am Workshop: Coffee - SCGP Cafe

Title: Coffee

11:30am Workshop: Danilo Lewanski - SCGP 102

Speaker: Danilo Lewanski

Title: A spin on Hurwitz theory and Topological Recursion

**Abstract:** Hurwitz numbers enumerate branched coverings of Riemann surfaces and provide a rich sandbox of examples for enumerative geometry and neighbouring areas. Surprisingly, there is a formula that connects them to the intersection theory of the moduli spaces of stable curves: the ELSV formula. Furthermore, these numbers enjoy an integrability of type 2D-Toda, result that has been later employed in the GW/Hurwitz correspondence. The topological recursion is a procedure originally arising from random matrix models that takes as input a spectral curve — a Riemann surface with some extra data on it — and returns the solution of some enumerative geometric problem. In fact topological recursion is under certain constraints equivalent to the Givental-Teleman reconstruction for semisimple cohomological field theories presented in Zvonkine’s course. A spin-off from the research on the mirror symmetry on Calaby-Yau 3-folds led to the generation of Hurwitz numbers via topological recursion. Over time this result has been generalised in different directions, including the Hurwitz count of Riemann surfaces with a spin structure, which are conjecturally determining Gromov-Witten invariants of surfaces with smooth canonical divisor.
1:00pm  Workshop: Lunch - SCGP 102
        Title: Lunch

3:30pm  Tea time - SCGP Cafe
        Title: Tea Time

6:00pm  Workshop Banquet - Simons Center Cafe
        Title: Workshop Banquet

Friday, August 25th

8:30am  Workshop: Breakfast - SCGP Cafe
        Title: Breakfast

9:30am  Workshop: Dimitri Zvonkine - SCGP 102
        Speaker: Dimitri Zvonkine
        Title: Teleman's classification of semisimple cohomological field theories and applications

10:45am  Workshop: Coffee - SCGP Cafe
        Title: Coffee

1:00pm  Workshop: Lunch - SCGP 102
        Title: Lunch

3:30pm  Tea time - SCGP Cafe
        Title: Tea Time