Lecture 7, 19.09.17

Reminder

- Γ, $Y \subset \Gamma$, (could be $Y = \Gamma$);
  $\mathcal{E}^0(Y)$, $\mathcal{E}^1(Y)$, $\mathcal{E}^2(Y)$
- Local representation in term of local parameter, rules when changing parameter.
- Integrals along curves and areas
- Differentiation of the forms. Exact and closed forms.

Holomorphic differentials

- Changing to "complex" form of forms and analytic local parameter.
- $(0,1)$ and $(1,0)$ forms.
- $(1,0)$ form is closed if $f(z)$ is holomorphic
- Definition Holomorphic differential (Abel differential)
- Relation to Abel integrals
- Example $\Gamma = \{w^2 = P_{2g+1}(z)\}$; $\eta_k = \frac{z^{k-1}dz}{w}$ is holomorphic differential for $k = 1, 2, \ \dots \ , g$.

Canonical section

- Construction of canonical section $\tilde{\Gamma}$
- Definition Periods of closed differentials
- Bilinear relation for periods of closed differentials:

$$\iint_{\Gamma} \omega \wedge \omega' = \int_{\tilde{\Gamma}} f\omega' = \sum_{i=1}^{g} (A_i B_i' - A_i' B_i)$$