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**Impurity Green's function of the one-dimensional Fermi gas** OLEKSANDR GAMAYUN, Lancaster Univ, ANDREI PRONKO, Steklov Institute of Mathematics, Petersburg, Russia, MIKHAIL ZVONAREV, Univ Paris-Sud, LPTMS — We investigate the model of an impurity interacting with free Fermi gas in one spatial dimension through a delta function potential both at zero and finite temperature. Using Bethe Ansatz technique we represent time dependent correlation function and the average momentum of an impurity as a Fredholm determinant. Our results are applicable both for finite repulsive and attractive interactions as well as in a Tonks-Girardeau limit.

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